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ENVIRONMENTAL ASSESSMENT  
for the  
GRANITE HORSE LANDSCAPE MANAGEMENT PROJECT  
(EA# OR110-99-28)

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
MEDFORD DISTRICT  
GRANTS PASS RESOURCE AREA

*February 2000*

Dear Reader:

We appreciate your interest in the BLM's public land management activities. We also appreciate your taking the time to review this environmental assessment (EA). If you would like to provide us with written comments regarding this project or EA, please send them to me at 3040 Biddle Road, Medford, OR 97504.

If confidentiality is of concern to you, please be aware that comments, including names and addresses of respondents, will be available for public review or may be held in a file available for public inspection and review. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this clearly at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or officials of organizations or businesses will be made available for public inspection in their entirety.

Robert C. Korfhage  
Field Manager  
Grants Pass Resource Area

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
MEDFORD DISTRICT

EA COVER SHEET

RESOURCE AREA: Grants Pass Resource Area

EA # OR-110-99-28

ACTION/TITLE: Granite Horse Landscape Management Project

LOCATION: T34S, R5W, Sections 15, 19, 20, 21, 29, 30, 31; T34S, R6W, Sections 22, 23, 26;  
T35S, R5W, Sections 03, 04, 05, 07, 08, 09, 10, 11, 15, 17, 18, 19, 20, 21, 29, 31, 33, 34;  
T35S, R6W, Sections 12, 13

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GRANITE HORSE LANDSCAPE MANAGEMENT PROJECT  
ENVIRONMENTAL ASSESSMENT

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## **Chapter 1**

### **Purpose of and Need for Action**

#### **A. Introduction**

The purpose of this environmental assessment (EA) is to assist in the decision making process by assessing the environmental and human affects resulting from implementing the proposed project and/or alternatives. This EA will also assist in determining if an environmental impact statement (EIS) needs to be prepared or if a finding of no significant impacts (FONSI) is appropriate.

This EA tiers to the following documents:

- (1) the Final EIS and Record of Decision dated June 1995 for the Medford District Resource Management Plan dated October 1994 (RMP);
- (2) the Final Supplemental EIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl dated February 1994;
- (3) the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and its attachment A entitled the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl dated April 13, 1994 (NFP);
- (4) the 1998 Medford District Noxious Weed Environmental Assessment dated April 1998.

In addition to the documents cited and tiered to the above, the planning of this project drew from the ideas, information and recommendations of the following:

- (1) Jumpoff Joe Watershed Analysis
- (2) Rogue River / South Coast FY99/00 Timber Sale projects Biological Assessment (July 6, 1998) and USFWS Biological Opinion (#1-7-98-f-321, September 18, 1998).

A glossary of selected terms is included in Appendix G. These definitions are from the RMP.

#### **B. Purpose and Need for the Proposal**

The broad purpose of the proposed action is to implement the Medford District's Resource Management Plan (RMP). The proposed action is designed to meet a variety of resource and human (social/economic) needs and objectives outlined in the RMP. These include:

- management of the watershed in a manner that will provide for and promote a wide a variety of non-commodity outputs and conditions including wildlife habitats, sustainable forest conditions, recreation opportunities, maintenance or improvement of water quality, and fisheries;
- contribution to the Medford District's timber harvest / forest products commitment, thus helping meet the demand for wood products both regionally and nationally thereby supporting local and regional economies.

## **C. Project Location**

The general location of the proposed project is shown on Map 1: Project Area Map. (All maps are located in Appendix A.)

## **D. Issues and Concerns Relevant to the Project**

A variety of issues and concerns were raised during the initial scoping of this project. These were raised by interested individuals or groups outside of the BLM, by the project planning team and BLM's interdisciplinary (ID) team. For the purposes of this document, an "Issue" is something that is *unique* to the project area that may need to be given particular consideration and which may contribute to defining a particular action alternative.

The issues identified as pertinent to the project are listed below. Many of these issues are taken from the Jumpoff Joe Watershed Analysis and were used in the design of the proposed project and alternatives. In some cases, an issue was considered at the onset by the planning team and then eliminated from further consideration because it was not judged something that was within the scope of this project or proposed action(s). These are summarized in Appendix D. The pertinent issues identified for this project are:

1. High stand densities throughout the project area are resulting in a decline of pine and oak. The exclusion of natural fire has contributed to growth stagnation in some stands as well as to slow seral stage progression/succession.
2. There is a high hazard for a stand replacing fire. Vegetation conditions in the project area are continuing to increase the fire hazard and risk. This creates an increasing probability for a large scale stand replacement wildfire.
3. Jumpoff Joe and Louse Creek areas have a relatively high density of roads.
4. There are several Oregon Department of Environmental Quality (DEQ) 303(d) listed streams in the project area (listed due to water temperatures).
5. The demand for recreation opportunities is increasing on public land.
6. Late-successional forest habitat is spatially fragmented throughout the project area due to edaphic conditions and past management. The resultant late-successional forest mosaic make dispersal difficult for some associated species.
7. There is a diversity of plant communities including those unique to serpentine soils. There are numerous Special Status and Survey/Manage plant populations.
8. The current large woody debris levels in some streams are less than ODFW benchmark standards. This suggests that fish habitat is less than optimum.
9. The exclusion of the natural fire cycle has increased the encroachment and density of fire intolerant plant species. Oak woodlands, meadows and other natural habitats have declined in

extent and vigor. Production of suitable browse for various wildlife species has declined.

10. Over 1,100 acres of young stands have been identified as overstocked with the potential for rapid growth after release.

11. Poor stocking of healthy vigorous regeneration in the understory and a declining overstory are resulting in a decline in conifer annual growth. (This condition has been identified on approximately 500 acres.)

12. The project area includes an RMP deferred watershed (Louse Creek and the upper Jumpoff Joe Creek subwatershed).

#### **E. Land Use Allocation Objectives**

Land Use Allocations (LUA's) are set forth in the NFP and RMP. The reader is referred to these documents for the a discussion of the relevant objectives. The Granite Horse project encompasses Matrix (southern General Forest Management Area) and Riparian Reserve land allocations.



## **Chapter 2**

### **Proposed Action and Alternatives**

#### **A. Introduction**

This chapter describes the proposed action and alternatives that are addressed and analyzed in this EA.

#### **B. Alternative 1: The No Action Alternative**

In this EA document the "no-action" alternative is defined as not implementing any aspect of the proposed action alternative(s). Defined this way, the no action alternative also serves as a baseline or reference point for evaluating the environmental effects of the action alternatives. Inclusion of this alternative is done without regard whether or not it is consistent with the Medford District RMP.

The no action alternative is not a "static" alternative. Implicit in it is a continuation of the environmental conditions and trends that currently exist in the project area. This includes trends such as vegetation succession and consequent wildlife habitat changes, road condition / deterioration, rates of erosion, continuation of current road densities, trends in fire hazard changes, OHV use, *etc.*

#### **C. Alternatives 2 and 3: Proposed Action Alternatives**

##### **1. Introduction**

Two action alternatives are proposed and analyzed. There are many elements common to both alternatives. The alternatives differ with regard to their broader objectives and timber harvest proposals in older seral stage stands. In designing the two action alternatives a host of other options or alternatives were considered. Those carried forward in the two proposed action alternatives are described in this section.

Approximately 7,411 acres of BLM-managed lands located in the upper Louse creek drainage and in the Jumpoff Joe Creek drainage upstream from Water Branch Creek were deferred by the RMP from harvesting and other surfacing disturbing activities. This was due to the cumulative effects of past management activities at that time. The deferral was to run until January 2003 during which time a reevaluation of the watershed conditions is to occur. Both alternatives include proposed activities within the deferred Jumpoff Joe Watershed (RMP, pg 42), activities which are consistent with the deferral purpose.

The descriptions of each of the action alternative are organized and presented based on broad "types of action" (*e.g.*, road actions, riparian restoration / treatments, fisheries enhancement, vegetation treatments, recreation related proposals, *etc.*). While presented in these discrete groupings, the interrelationships between them must be kept in mind particularly in considering the overall effects of the alternatives.

## **2. Proposed Action: Recreation (Alternatives 2 and 3)**

### **1) Objectives of the Recreation Proposal**

Provide additional recreational opportunities to meet the growing demand for recreation.

### **2) Description of the Proposed Horse Creek Ridge Trail**

The Horse Creek Ridge Trail would be constructed on the ridge separating Jumpoff Joe and Grave Creek (see Map A-2). The trail begins from the Horse Creek Road in section 20 (T34S, R5W) and continues west/northwest towards Mount Sexton. The trail offers views of the Jumpoff Joe and Grave Creek drainages and would provide recreational opportunities for non-motorized uses such as horseback riding, mountain biking and hiking. The trail continues along the ridgeline for 1½ miles before reaching Josephine County land in section 24 (T34S, R6W). The ridgeline trail follows the historic Mt. Sexton phone line and passes through serpentine outcrops, meadows and forests. The trail loops back along a southeast ridgeline for 1 mile to the main trail. If access can be acquired, the trail is proposed to continue to the Mt. Sexton Summit (an additional 1½ miles).

Along the Horse Creek Ridge Trail a no thinning / no harvest buffer of 25 feet (horizontal) on either side of the trail would be established to maintain a visual screen of adjacent harvest units. In addition, no trees greater than 16" DBH will be harvested between 25 and 50 feet of the trail. Fuel hazard reduction will occur along the ridge line outside of the trail buffer. Fuel hazard reduction will include some understory thinning. (See proposed action for fuels.)

The trail head for the ridge trail will be at the junction of the Horse Creek Road and the power line. This area has a wide, turn around suitable for horse trailers and for parking. The temporary spur in section 20 would be blocked after this project's use, decommissioned to a 3 foot width to provide trail to access the ridgeline.

The ridge trail is proposed to emphasize non-motorized use. Interpretive signs will be placed along the trail, discussing the effects of motorized use off the trail and in serpentine meadows and steep slopes. Other uses allowed would include hiking, mountain biking and horseback riding. The trail will be built 2-3 feet wide with a clearing height of 8-10 feet. The trail will be built either by hand or with mechanical equipment.

## **3. Proposed Action: Riparian Reserve Treatments (Alternatives 2 and 3)**

Riparian reserves provide habitat and connectivity corridors for wildlife and fish and contribute to proper stream functioning. In some cases, where conditions are improving naturally, a specific no-treatment option may be most appropriate. In others, treatments would be implemented to promote the long term ACS objectives.

Riparian reserve widths would conform with the interim widths prescribed in the NFP (p. C-30). Table 2-1 indicates the applicable riparian reserve widths. Within some areas of the riparian reserves vegetation treatments would be implemented. These proposals would be based on the existing stand / vegetation conditions at the local site. Implementation would be based on the potential benefit to the aquatic systems and the opportunity to meet and promote ACS objectives in the short and long term.

At some sites no-action would thus be the deliberate prescription. In all cases a no treatment area adjacent to the streams will be maintained. Table 2-2 indicates the no young stand and fuel reduction management treatment widths within the riparian reserve. These are based on slope and stream class.

<b>Table 2-1: Riparian Reserve Widths</b>		
Stream Class	Site potential Class	Riparian Reserve Width** (ft)
Class 1	IV	the greater of 300 ft. or 2 site potential tree heights
Class 2	IV	the greater of 300 ft. or 2 site potential tree heights
Class 3	IV	the greater of 150 ft. or 1 site potential tree height
Class 4	IV	the greater of 150 ft. or 1 site potential tree height

\*\* Widths are and are determined in accordance with BLM Instruction Memo OR-95-075 (3/30/95).

<b>Table 2-2: No Treatment Widths Within the Riparian Reserve for Young Stand and Fuel Reduction Management Proposals</b>		
Stream Class	No treatment widths in feet	
	<50% slope	>50% slope
1 & 2	25 feet or slope break (whichever is greater)	50 feet or slope break
3 & 4	25 feet or slope break (whichever is greater)	50 feet or slope break

a) Treatment Objectives

Treatment objectives within the riparian reserves are:

- Accelerate the successional rate of early seral riparian vegetation.
- Increase the potential for long term recruitment of large snags and coarse wood within the stream channels.

b) Proposed Treatments

Vegetation treatments would be limited to thinning, brushing and slash burning in early and mid seral stands. Thinning, burning and brushing would not occur within the “no treatment” area adjacent to each side of the stream bank. There would be no cutting or removal of trees greater than 12" DBH. The “no treatment” buffers of 25 or 50 feet width on intermittent and perennial streams will be implemented to minimize removal of vegetation shading the stream and to prevent the delivery of sediment to the stream. Snag and down wood component criteria will be met in the Riparian Reserve by girdling trees of different size classes to create snags that will fall naturally, cutting and leaving small trees, or by felling and leaving trees up to 12 “ DBH. Trees smaller than 12" DBH may be removed from the riparian area after snag and down wood amounts meet desired levels, but no larger trees will be cut or removed from the Riparian Reserve. Any trees removed from the riparian will be felled toward pre-existing roads and skid trails and bull-lined out from the road. With the exception of

paved roads, any roads or skid trail used for riparian access will be decommissioned following use. Skid trails will be used in the riparian only if they have not recovered from previous use and could benefit from restoration.

#### **4. Proposed Action: Special Forest Products (Alternatives 2 and 3)**

##### **a) Objectives of the Special Forest Products (SFP) Program**

The objective is to utilize and to provide a wide variety of special forest products sale / collection opportunities consistent with the vegetation, habitat and stand objectives.

##### **b) Description of the Proposed Action**

All timber harvest, fuel reduction and young stand treatment units (see Table B-2) would be available for special forest product (*e.g.*, poles, fuelwood, burls) harvesting / collection. Pole removal and availability may include helicopter removal of poles to designated areas (*e.g.*, operator spurs, landings and roads). The overall alternative objectives and the stand treatment and silvicultural prescription (Table B-2) would remain as the treatment guide for SFP activity.

#### **5. Proposed Action: Young Stand / Forest Development Treatments (Alternatives 2 and 3)**

##### **a) Objectives of the Young Stand Treatments**

The objective of young stand treatment is to accelerate the growth of young stands and while retaining a species composition and diversity appropriate to the site and where appropriate in both the matrix and the riparian reserve land allocations and where consistent with their respective objectives.

##### **b) Description of the Treatments for Young Stands**

The locations of the proposed young stand treatments are listed in Table B-1. The proposed vegetation treatments noted are described as follows:

1) *Brushing (BR)* - This treatment provides more growing space to enhance conifer and/or hardwood survival and growth. Severance of surplus trees would be with a chain saw. Surplus hardwood vegetation is defined as all brush and hardwoods less than 8" DBH *not* selected as a leave tree. Conifer surplus trees are 6" DBH or less and *not* selected as leave trees. All tanoak less than 12" DBH would be treated as surplus vegetation. Conifer leave trees would be spaced approximately 8' on most units and hardwoods would be spaced approximately 25' apart.

2) *Precommercial Thinning (PCT)* - This work consists of cutting or girdling surplus trees and brush to increase moisture, growing space and nutrient availability for selected conifer and hardwood leave trees. All tanoak less than 8" DBH and brush would be cut. All sprouting hardwood stems not selected as leave trees and all surplus trees up to 7" DBH would be cut. Vigorous and well-formed conifer leave trees would be maintained at an average of 14' spacing (220 trees / acre) and well-formed leave hardwoods would be maintained at either 20' foot spacing (110 TPA) or 25' foot spacing (70 TPA) spacing depending on the particular treatment unit. Where average

stand diameter exceeds 7" DBH, surplus trees up to 12" DBH would be cut. Vigorous and well-formed conifer leaf trees would be spaced not to exceed an average of 20' spacing (110 TPA) and well-formed hardwoods would be maintained at either 20' foot spacing (110 TPA) or 25' foot spacing (70 TPA) spacing depending on the particular treatment unit.

3) *Slash treatment* - After the above treatments are completed, the slash would be evaluated for hazard reduction treatment. Evaluation will be based on the level of the fuel hazard, the wildfire risk, and the value of resources within stand and the adjacent area. The most common slash treatment would be hand pile and burning (HP). Other treatment options include lop and scatter (LS) or removal of slash as poles or firewood.

4) *Tree Planting (TP)* - This includes the initial planting of nursery seedling stock after site preparation has been completed on a harvest unit. In some cases, the entire unit would be planted. In other cases, the inter-planting of nursery stock would occur in stands that need more seedlings between existing trees to raise stocking levels to meet BLM's fully stocked standards. Often included with tree planting, are maintenance treatments to enhance growth or increase the chance of seedling survival in the first years after planting. This would include hand tool scalping a small circle of the competing grasses and forbs around the planting spot, and/or paper mulch or vispore installation to prevent soil moisture loss around the planting spot, and /or installation of tree netting to prevent browsing by wildlife, and/or an application of a delay release fertilizer packet with the seedling at the time of the planting.

## **6. Proposed Action: Vegetation Treatments in the Older Seral Stands**

Two alternatives regarding thinning and harvesting timber in older (mid, mature and old growth) seral stage stands are presented. The broad objective of both alternatives is to capture suppression and mortality in older stands while promoting tree growth and species diversity across the mosaic of landscape conditions and to reduce potential for stand replacement wildfire occurrence. The common objective is also to harvest timber to meet BLM's commitment to provide forest resources to the local economy. The focus for treatment proposals is at the individual stand level which may be at a finer grained mosaic than that reflected in the operations inventory units shown in Table B-2.

### **a. Alternative 2 - Older seral stage stands**

Alternative 2 emphasizes increasing long term stand growth by reducing stem densities from all canopy layers and tree size classes. Vegetation treatments and harvesting in older seral stage stands would follow the silvicultural prescription in the RMP. Residual stand structures and stand variability would be as described in the RMP. Post treatment canopy closure would vary between 25% and 40% on harvest units. Project area diversity would be maintained through the variety of RMP prescribed reserves within the project area (*e.g.*, riparian reserves, spotted owl reserves, botanical areas).

#### **1) Alternative 2 Harvest Treatment Description**

See Table B-2 (Appendix B) and Maps in Appendix A for specific unit treatment proposals. A summary of the extent of each treatment type proposed is shown in Table 3-1. The following describes the various types of treatment proposals:

**Commercial Thinning/ Modified Group Selection (CT/MGS)** - On a Douglas-fir series stand, this treatment would strive to retain a healthy, growing conifer overstory. It would remove merchantable size trees (4" DBH or greater) that have slowed in growth or are subject to mortality. Also, this treatment would insure that hardwood and pine components would be developed for species diversity and soil productivity. On those sites identified as a pine series or pine associations, fewer trees per acre would be retained than on the Douglas-fir sites. The following is a more specific objective discussion and a description of this treatment:

- "Commercial thinning" of Douglas-fir, pine species, and other conifers would be done with the intention of decreasing stand density. This treatment would remove suppressed trees and clumped intermediate and co-dominate trees to increase individual tree growth and accelerate seral stage progression of the stand. It would use the crown radius of the most healthy trees to measure spacing between the retention trees.
- "Modified group selection for pine survival" is the removal of other trees around a selected pine tree. This treatment removes those trees (usually Douglas-fir) that are competing with vigorous pines. It favors and retains the larger vigorous pine (Ponderosa or Sugar) that have a 30%+ live crown ratio. It is intended to increase the chance that the pine will survive and regenerate pine seedlings.
- "Modified Group Selection for Hardwood Survival" is the removal of other trees around a selected hardwood tree. It would be done when large healthy hardwoods are present. This treatment manages for long term survival of the large hardwoods such as black oak, madrone, white oak, live oak, maple, or tree form tanoak. It is intended to maintain a stands' species diversity. Between one and five vigorous hardwood trees per acre would be selected for retention. Vigorous hardwoods are those trees with a 25%+ live crown ratio, which show a low amount of disease (rot), and that could be expected to remain alive for the next 15 years. The long term survival of these trees would be encouraged by removing those conifers that are competing with the hardwood. On some sites especially suited to hardwood dominance, more than five hardwoods would be left per acre. In these situations, selected hardwoods would be included in the conifer spacing pattern and favored for retention over conifers. In areas where the white oak series is present, the treatment will manage for the survival of the White Oak.

**Structural Retention for Stand Regeneration (SR)** - This stand treatment would increase the growth of the existing understory trees or regenerate a new understory with natural seeding and / or tree planting. Stands with a overstory stand age greater than 120 years and which have a poor annual stand growth rate would be selected for this treatment. Commercial thinning of these stands would not provide the desired increase in productivity, thus the SR. A target of 16 to 25 large conifer trees per acre (Southern General Forest Management guideline) would be retained. Trees greater than 6"DBH would be removed between the trees selected for retention. Portions of some of these stands may be treated with the CT/MGS, if appropriate. The following is a discussion of the other features of this prescription:

- Hardwoods would be managed for long term survival of the large hardwoods (black oak, madrone, white oak, live oak, or maple). Between one and five hardwood trees per acre will be selected for retention. The long term survival of these trees would be

encouraged by removing those conifers that are competing with them. On some sites especially suited to hardwood dominance, more than five hardwoods would be managed per acre. In these situations, selected hardwoods would be included in the conifer spacing pattern and favored for retention over conifers. In areas where the white oak series is present, the treatment will manage for the survival of the white oak. Vigorous hardwoods are those with a 25%+ live crown ratios that show a low amount of disease (rot) and which are judged capable of surviving for at least the next 15 years.

**Post Harvest Treatments for All Harvest Units** - After thinning / harvesting is completed, the proposed action would continue to treat the site with some or all of the following treatments:

- The main stems of selected suppressed smaller trees would be severed (slashed). Selected trees would be those small suppressed trees that are within the drip line of the larger trees chosen for retention. Suppressed trees are those judged to be unable to recover and become healthy growing trees after the harvest treatment. The plant competition for water and soil nutrients would be lowered by severing the stems of the suppressed competing conifers and hardwoods.
- Damaged residual saplings and damaged pole size trees would be severed. Water and soil nutrient availability would be improved for the healthy trees remaining. In general, a damaged tree would be less than 6" DBH and have a slow recovery from injury, *e.g.*, a sprung tree or a broken top tree that was bent over by the skyline cables during logging.
- The understory vegetation would be selectively thinned. The density of competing vegetation would be reduced by thinning the *conifer* understory trees to an approximately 16' spacing. *Conifer* trees less than 6" DBH between the trees chosen for retention would be slashed. The *hardwood* understory trees would be thinned to a 20' spacing. The healthiest and most vigorous trees would be selected for retention.
- Logging and thinning slash would be burned. This treatment would under burn (UB) or hand pile and burn (HP) the tree limbs and other debris on the ground after logging and thinning work is completed. The intention is to reduce fuel loading and/or create planting spaces. Live tanoak and other brush species would also be targeted for burning to reduce conifer seedling competition.

**Special Harvest Treatment Objectives for Visual Resource Management (VRM) Class II** - The general management objective for VRM Class II lands is to retain the existing character of landscape (RMP). Stands proposed for treatment within the Class II zone are identified in Table B-2. VRM II foreground / middle ground refers to treatment units that are within one mile or to the first ridge, whichever is closer, from viewpoints on I-5. No Structural Retention treatments are prescribed within the VRM II foreground / middle ground management zone. Within the foreground / middle ground zone, the CT/MGS treatment would predominately remove the smaller crowned trees in order to retain the larger crowned trees to provide a continuous visual canopy.

**Sensitive Species Management (Wildlife and Botany)** - Modifications to the treatments will be done in order to meet the appropriate management guidelines / recommendations of various special status species of wildlife and plants.

b. **Alternative 3 - Older Seral Stage stands**

1) Alternative 3 objective

The framework for alternative 3 was developed during the Jumpoff Joe and Grants Pass Watershed Analysis processes. Late-successional forest stands (543 acres) located in the watershed were rated based on the following criteria: stand size, stand age, canopy layering, canopy closure, connectivity, interior forest habitat, refugia value and number of known special status species present. The units shaded in Table B-2 (Appendix B) include the highest quality stands of late-successional forest habitat on the matrix lands in the project area. The objective of Alternative 3 is to emphasize a greater retention of late-successional forest characteristics in these highlighted stands. This alternative is designed to provide commercial harvest from these stands while retaining a denser canopy closure with a more complex structure.

In alternative 3, the objective would be to manage *more* acres for habitat and connectivity of late-successional forest dependent species than in Alternative 2. It would achieve this objective by retaining *more* acreage with a canopy closure of 50% or more than would Alternative 2.

2) Alternative 3 Harvest treatment Description

See Table B-2 (Appendix B) and Maps in Appendix A for specific unit treatment proposals.

Alternative 3 proposes the same harvest and vegetation treatments as for Alternative 2, *except* with regard to the treatments of stands suitable for late-successional forest habitat management. These units are "shaded" in Table B-2 (Appendix B) and would be commercial thinned predominately *from below* with a *limited* Group Selection (CTB/LGS). Commercial thinning would target trees in the intermediate and suppressed layers in order to maintain a relatively high canopy closure in the large tree / overstory population. Co-dominate removal would be limited to areas where a 50% or greater canopy closure will result after harvest. Group Selections would be limited to 1 group per 10 acres. In all other respects, the harvest treatments and post harvest treatments would be the same as described for Alternative 2.

**7. Proposed Action: Prescribed Fire / Fuel Hazard Reduction Treatments  
(Alternatives 2 and 3)**

a. Objectives of prescribed fire / fuel hazard reduction projects

The objectives of the prescribed fire / fuel hazard reduction proposals include:

- Limit the potential rate of wildfire spread and the severity of the effects of burning through the management of the natural fuel accumulation.
  - Remove the ladder fuels that would lead a ground fire into the forest canopy.
  - Reduce the stem density of the understory to lower the heat intensity and flame lengths when a wildfire does occur.
  - Establish potential defensible areas for use during fire suppression activities.
- Reduce the fuel hazard in areas of higher wildland fire risk (Rural Interface Area (RIA)).



-- Treat the logging slash on the areas where timber is harvested; minimize the fuel hazard created by the buildup of slash after a harvest treatment. All treatment areas will be reviewed following harvest treatment and the most effective fuel reduction treatment would then be recommended.

-- Restore selected wildlife habitats with prescribed burning. The exclusion of the periodic fire cycle has changed the natural vegetation trends. Oak woodlands and meadows can be restored through the controlled burning of decadent shrub fields and encroaching conifers. See Table B3.

– To accelerate the growth of residual stands while retaining a species composition and diversity appropriate to the site and, as appropriate, in both the matrix and the riparian reserve land allocations and where consistent with their respective objectives.

-- Use a Long Term Strategy to Accomplish Hazard Reduction Across the Landscape. The strategy to accomplish hazard reduction and create desired fuel conditions is long term and does not attempt to create the desired conditions immediately. Initial treatment areas that can be used as anchor points for area wide fuel treatments such as prescribed burning, will be of higher priority than other areas. These areas would include: ridge tops, rural interface areas, roads, and valley bottoms. The initial treatment also gains some level of immediate reduction in hazard that would reduce the fire intensity in that immediate area and in some cases an additional benefit would be the potential location for use by suppression forces. The areas in the mid-slope ranges would be accomplished after the anchor points have been established creating an area wide treatment of fuels. The last and continual phase would be maintenance treatments such as prescribe fire to sustain the desired fuel condition.

#### b. Description of Proposed Action

See the tables and maps for unit locations with fuel reduction treatment proposals. Fuel Hazard Reduction treatments would not be applied within the “no treatment” zones within Riparian Reserves. All treatments that produce special forest products (*e.g.*, firewood or poles) would be evaluated before burning as to their potential for sale and use through the Special Forest Products program. In some cases, removal of slash by less conventional means such as helicopter or a mechanical wood chipper will be considered when it is operationally dictated by burning constraints.

The fuel treatments proposed in Tables B-1, B-2, and B-3 reflect the current best judgement regarding the treatments that may be necessary. Funding is a major factor that may limit the total actual accomplishment. All fuel treatments associated with timber harvest are expected to occur. The proposed treatment method may be adjusted based on post-harvest conditions and a consideration of the physical, biological, and social features of each specific site at that time. If prescribed burning is not used on a harvest area then lop and scattering of slash would most likely occur.

Treatments associated with precommercial thinning, wildlife habitat enhancement and fuel hazard reduction would occur based on funding and priority. Factors that influence priority include distribution and need for habitat development, biological and social constraints, and strategic hazard reduction needs for wildfire protection. It is anticipated that 80% or less of the acreage proposed for treatment in these actions would actually receive treatment. Precommercial and understory thinnings that do not have prescribed burning treatments would have lop and scattering of slash. It is expected that the treatments would take place within a five year period after project initiation.

*Understory Thinning (UT)* - The treatment is to reduce understory vegetation stocking thereby reducing competition for nutrients, water, and light, and reducing fuel hazard. The density of the understory vegetation would be reduced by cutting and spacing of vegetation that is less than 7" DBH. All trees greater than 12" DBH are considered reserve trees. Species diversity would be maintained by selectively slashing hardwoods, conifers and shrubs, reserving specified species. In addition, groups and clumps of vegetation may be reserved from treatment. These areas may range in size from 1/10 acre to 1/2 acre. Leave vegetation would be spaced to widths ranging from 15' to 30'. Wider spacing would be used when leave vegetation is larger sized or includes species such as pine or oak which thrive at their healthiest state in less dense conditions.

*Understory Burning or Underburn (UB)* - The application of prescribed fire within areas where residual trees and shrubs are present. The prescribed fire objective is to reduce the fuel hazard for both dead and down woody material and to reduce the amount of "ladder" fuels present. Ladder fuels consist of both live or standing dead vegetation such as shrubs and small trees in the understory and live and dead branches close to ground level on overstory trees. Understory burning is conducted at anytime throughout the year when fuel and weather conditions will permit the successful achievement of resource objectives. Typically burning is conducted from fall through late spring. Summer or early fall burning is less common, but can be feasible when needed to meet resource objectives and when escape fire risk can be mitigated.

*Wildlife Habitat Enhancement/ Oak Meadow Restorations* - These treatments would be designed to reduce both live and dead fuel, lower the fuel hazard, and increase the value of vegetation conditions for a wildlife habitat. The treatments would include thinning vegetation (UT), hand piling and burning (HP/B), and/ or underburning (UB). See Tables B3 for the location of these restoration areas.

*Hand piling and burning (HP/B)* - HP/B would reduce the hazardous slash buildup which is created by the various described treatments and when understory burning (UB) is not possible. Sticks between 1 and 6" in diameter and greater than two feet in length would be stacked in piles by hand crews. Piles would then be covered with black plastic to create a dry ignition point and would be burned in the fall or winter season after enough precipitation has occurred. Piles are burned during this season to reduce the potential for fire to spread outside each pile, and to reduce the potential for scorch and mortality to the residual trees and shrubs.

*Pruning (Pr)* - Ladder fuels which consist of the live and dead branches close to ground level on overstory trees would be targeted for removal by pruning. Tree limbs and branches would be closely cut to the bole between six and ten feet from the ground. Enhancement of the future log value of the tree is a secondary benefit.

*Lop and Scatter (L/S)* - This is a fuel reduction treatment that does not burn the fuel. The fuel (such as logging slash) is cut into smaller pieces and scattered so that it is in contact with the ground surface. The resultant fuel bed would have a slower rate of spread and flame height during a wildfire and decreases decomposition time. This is an alternative to other treatments when burning is not considered feasible. It is ineffective on heavy fuel loading.

*Fuel Hazard Reduction Area (FHRA)* - Areas identified as strategic locations where fuel hazard reduction treatment would meet individual or combination of resource objectives. The treatments will include understory thinning (UT), hand piling and burning (HP/B) and/or underburning (UB).

*Rural Interface Areas (RIA)* - Fuel hazard reduction in rural interface areas of higher wildland fire risk. Focus would be conducted in areas that have residential structures in close proximity to BLM property boundary lines and/or along property boundaries and along roadsides. Treatments would be very similar to Fuel Hazard Reduction Areas. Other fuel removal treatments that do not involve prescribed burning may be possible if there is a product of value accessible to a user.

## **8. Proposed Action: Wildlife Habitat Restoration and Enhancement (Alternatives 2 and 3)**

A number of prescribed burns to restore and enhance wildlife habitat are proposed. The overall goal of these projects is to:

- bring back a wide variety of plant communities to their natural range of conditions;
- restore winter range to benefit big game animals such as deer and elk;
- maintain chaparral and the species that depend on this community.

Four plant communities would be treated: oak woodlands, chaparral, meadows and Jeffrey pine savannahs. See Table B3 for the locations of these proposed treatments.

### **a. Oak Woodlands**

#### **1) Treatment Objectives**

Restore oak woodlands by removing encroaching conifers through mechanical methods and / or prescribed burns.

#### **2) Description of the Treatment Proposal**

In the oak woodland portion of unit 34S-5W-19-012 remove all conifers except vigorous pine and large limbed open grown Douglas-fir. Trees and brush not meeting the above description would be harvested or girdled. This treatment includes under-burning to remove conifer saplings, seedlings and brush.

### **b. Meadows**

#### **1) Treatment Objectives**

Restore meadows being encroached by conifers or that exhibit a heavy grass thatch buildup.

#### **2) Description of the Proposed Treatment**

In unit 34S-5W-30-003 burn approximately 14 acres of natural meadow to remove grass thatch, woody plant material and encroaching conifers. Burning would be done when conditions allow for a cool, controlled burn (usually during the winter or early spring). The meadow will be burned by the use of drip torches or other similar lighting devices. A small temporary fire trail may need to be constructed on the edge of the meadow to form a control point. All work will be done with hand tools such as chainsaws, shovels, axes and pulaskis.

c. Jeffrey Pine Savannah

1) Objectives of the Treatment

Restore a Jeffrey Pine savannah with fire to reduce the encroachment of Douglas-fir and to maintain the sometimes included chaparral community that has become senescent.

2) Description of the Proposed Treatment

In unit 39S-5W-19-013, under burn approximately 25 acres of Jeffrey Pine savannah. The burn will be concentrated in areas with young sapling Douglas-fir and pockets of senescent ceanothus. The burn would most likely be done during the winter or early spring when conditions allow for a cool, controlled burn. Ignition will be done with hand lighting devices such as drip torches or other similar lighting devices. A small temporary fire trail may need to be constructed on the edge of the savannah to form a control point. All such work will be done with hand tools such as shovels, chainsaws, axes and pulaskis.

d. Chaparral Community

1) Objectives of the Treatment

Reinvigorate the chaparral community that has largely become senescent.

2) Description of the Proposed Treatment

In unit 34S-5W-30-007 prescribed fire will be used to burn a mosaic of chaparral, grassland, oak stands to maintain a variety of habitat in particular the chaparral community. The burn would most likely be done during the winter or early spring when conditions allow for a cool, controlled burn. Ignition will be done with hand lighting devices such as drip torches. Small temporary fire trails may need to be constructed to form points of control. Work may be done with a variety of tools including but not limited to hand tools such as chainsaws, shovels, axes and pulaskis.

**9. Proposed Action: Roads and Transportation Management (Alternatives 2 and 3)**

Road treatment proposals address roads that would be used to support the vegetation / land treatments proposals as well as some other roads in the project area that need some work.

a) Objectives

Minimize permanent road construction, utilize temporary spurs and decommission

b) Description of the Proposed Action -

The proposed road work (construction, maintenance, decommissioning, etc.) is outlined in Table B-4 and on Maps A1 and A2. The table lists the roads that would be used, constructed, improved, renovated, and/or decommissioned as a part of this proposed project. Construction, improvement, and renovation work would be primarily a part of the commercial harvest and vegetation treatment actions.

Other proposed road work would be accomplished as future funding is available.

#### **D. Project Design Features**

Project design features (PDFs) are included in the proposed action for the purpose of reducing anticipated adverse environmental impacts which might stem from the implementation of the proposal. The PDFs noted below would be a part of all action alternatives, unless otherwise noted.

##### **a. Logging Systems**

##### **1. All systems**

All harvested trees would be limbed (3" or greater diameter limbs) in the units prior to yarding. This is to reduce the extent of damage to the residual stand and to reduce soil disturbance.

All natural surface landings constructed during the logging operation would be decompacted to a minimum depth of 18", seeded with an erosion control grass and legume mixture or native grass seed, if available, and straw mulched upon completion of the harvest activity and before the onset of the rainy season. Landings that would be used in the future would not be decompacted.

No new skid roads or new stream crossings will be constructed in riparian reserves. Within riparian reserves, trees will be directionally felled to pre-existing skid roads approved for use. Skid trails approved for use would be those that have not recovered from previous use and which would benefit from site amelioration / restoration treatments. Site restoration treatments would be applied after yarding has been completed and would include such things as ripping / decompaction, water barring, seeding, tree planting and blocking as appropriate for the site.

Erosion control grass with legumes or, if available, a native grass seed will be used on erosion sensitive areas such as granitic soils. The following OI units have granitic soils mapped and are erosion sensitive: 35S-5W-19-3, 7; 35S-5W-29-3; 35S-5W-31-All; 35S-5W-32-1,2,3; 35S-6W-1-3; 35S-6W-11-2,3; 35S-6W-14-1; and 35S-6W-27. All erosion sensitive areas would also be covered with slash where needed, particularly where natural slopes are 20% or greater. Completion of erosion control work would be before the onset of the rainy season.

In areas with unstable soils (areas showing active movement) an assessment would be made of the risk of future slides. Trees would not be severed in a high risk area in order to maintain root strength and soil stability.

Unstable and potentially unstable areas (areas showing active movement and indications of past movement) will be treated as riparian reserves (NFP: Standards and guidelines pp. C30, C31). The objective of this type of riparian reserve is to maintain or improve root strength. Within unstable areas where there is active movement (such as slip plains, step benches, recent debris flows or debris slides) there will be no vegetative treatment. Within areas with indications of past movement that are potentially unstable some vegetative treatment may occur where long term root strength can be maintained or increased. This will include pre-commercial thinning, hand piling and slash burning.

## 2. Tractor Logging

To reduce ground disturbance and soil compaction, yarding tractors would be limited to the smallest size necessary. Tractors would be equipped with integral arches and 150 foot bull lines to obtain one end log suspension during skidding of the logs. They would be restricted to approved skid trails. Existing skid trails would be reused whenever possible. Tractors would be restricted to slopes less than 35% although short pitches that exceed 35% would be permissible if necessary.

On non-serpentine soils, tractors would not be authorized when soil moisture content, at a 4 - 6" depth, exceeds 25% by weight as determined by a Speedy Moisture Meter.

On serpentine influenced soils (Cornutt, Dubakella, and Brockman) soil moisture levels at the 8 - 12" depth will determine when operations will be permitted. These soils have a clay subsoil that generally starts at depths of 9 - 16" and is slowly permeable and may cause water to accumulate over the clay. Tractor operations will not be permitted when moisture level at this depth exceeds 25% by weight as determined by a Speedy Moisture Meter. The following units include serpentine influenced soils: 19-010, 19-011, 20-008, 29-003, 29-005, 29-005, 29-006, 29-007, 30-002, 31-001, 31-003, 26-002, 17-004, 19-001, 19-004, 20-002.

Skid roads would be water barred in a manner appropriate to the slope and soil type. Main tractor skid trails would be blocked where they intersect haul roads. Tractor skid roads would be decompacted and waterbarred shortly after yarding is completed to reduce the erosion potential. The ripped skid roads would be planted with trees in areas which are proposed for planting. Other areas would be allowed to seed in naturally.

## 3. Cable and Helicopter Yarding

In cable yarding units, step landings would not be permitted. Cable yarding corridors would be located away from draws. Cable yarding corridors would be waterbarred when needed and at spacing appropriate for the slope and soil type.

All landings, including fill slopes would be located away from headwalls and draw bottoms and adjacent draw side slopes. Some existing roads and landings have been constructed in the past within the riparian reserve. If these roads and existing landings are stable, they would be reused to minimize additional new road or landing construction. All natural surface landings constructed during the logging operation would be decompacted except on rocky ground and those planned for future use. They would be seeded with an erosion control grass and legume mixture or native grass seed. They would be straw mulched or covered with slash upon completion of the harvest activity and before the onset of the rainy season. At a minimum, all landings would be well drained and seeded if necessary to control erosion.

### b. Seasonal Operation Restrictions

Table 2-3 outlines the seasonal operating restrictions that would apply:

Table 2-3: Seasonal Operating Restrictions			
Location	Restricted Activities	Restricted Dates	Reasons / Comments
Entire project area	All logging and log hauling operations	Oct. 15 to May 15 of following year	Erosion Control. Some variations of the dates would depend on weather and soil moisture conditions.
1/4 mile radius around known spotted owl nest sites. Any other discovered spotted owl nest sites	All timber harvest activities (felling and yarding), road construction, chainsaw operation and prescribed burning	March 1 to June 15 (or later if deemed necessary)	Dates and restriction dependent on nesting status. (Rogue River/South Coast Biological Assessment, 1998)
Entire sale area - 1/4 to 1/2 mile radius around any raptor nest	All timber harvest activities (felling yarding, road construction) and chainsaw operation.	Variable depending on the species	(BLM Instruction Memo OR-99-036).
All harvest units and road construction ROWs.	Various activities depending on the species	Variable depending on the species	Restrictions only if special status species are located. (BLM Instruction Memo OR-99-036)

c. Fire and Fuels Management & Fuel Hazard Reduction Treatments

A prescribed fire plan would be prepared to address burning objectives and operational concerns. The plan would include acceptable fuel moisture and weather parameters. The timing of the burn would be based on achieving the objectives when the weather parameters are correct. It would take into account the availability of adequate fire suppression resources. Prescribed fire plans include design features to diminish any potential of fire escape from control lines. These features must be in place before burning is permitted to occur. Features include: prescribed weather and fuel moisture conditions which produce fire behavior which can be readily controlled by direct attack; specified numbers of people and equipment required for holding forces; and escape contingency requirements such as the availability of backup forces, both locally and regionally.

Prescribed burning would be managed in a manner consistent with the requirements of the Oregon Department of Forestry's Smoke Management Plan and the Department of Environmental Quality's Air Quality and Visibility Protection Program. Smoke would be managed to preclude intrusion into air quality maintenance areas when air stagnation conditions exist. These conditions are usually described as "yellow" or "red" wood stove advisory days. Additional measures to reduce the potential level of smoke emissions would include mop-up to be completed as soon as practical after the fire, burning with lower fuel moisture in the smaller fuels to facilitate their quick and complete combustion, burning with higher fuel moisture in the larger fuels to minimize consumption and burn out time of those fuels, and covering handpiles to permit burning during the rainy season where there is a stronger possibility of atmospheric mixing and smoke dispersal.

All areas planned for prescribed fire treatments that contain sensitive plant species would be burned under the weather and fuel conditions and/or season that minimizes impacts on plant reproduction and active growth. Areas with rock outcrops or talus where S&M molluscs or salamanders would be buffered from any prescribe burn to avoid potential impacts to these animals.

All proposed treatment units would be re-evaluated following logging or other vegetation treatment to

insure that the slash/fuel treatments are appropriate for the post harvest/treatment condition. The fuel treatments noted in Tables B-1, B-2, B-3 reflect the current best estimate of fuel treatment needs. Treatments would be changed if it appears that something different would better accomplish fuel treatment and/or site preparation needs while reducing the potential adverse impacts on air quality and site productivity.

Prescribed Fire Escape - To prevent fire from escaping control and to minimize potential damage to overstory trees, burning would occur during the late fall to early spring season when weather and fuel conditions allow the least active fire behavior.

Fireline Construction is used in broadcast and understory burning and would be accomplished by hand construction methods. Waterbaring would be used on all firetrails where slope exceeded 10% to control water runoff and limit potential erosion.

Patrol and Mop-up of burned areas would occur to prevent areas from reburning and becoming escaped fires. A helicopter with water bucket may be used during mop-up to aid in extinguishing larger burning fuels and internal reburning in islands of unburned fuels.

Mechanical Chipping - Disposal of slash located on or near unsurfaced roads, roads designated for decommissioning, operator spurs and landings may include mechanically chipping and spreading wood chips on the road surface and adjacent land. Material will be utilized to cover disturbed soils to help minimize erosion. A chip depth of 2" or less would be the goal so as not to prevent seedlings from growing through the chip layer. Chips would be placed so as not to inhibit proper ditch and culvert drainage.

d. Roads - Construction, Improvement, Decommissioning, Closures

All new road construction and improvement would be done at the minimum standard appropriate to the intended long term use of the road. Road closures and decommissioning are intended to reduce the potential for erosion and to reduce the impacts on wildlife. Roads proposed for decommissioning that are needed to support the prescribed burning / fuel reductions would have the decommissioning scheduled for after burning is complete. These roads would be treated for erosion control (waterbars, seeding, mulching or slash where needed, as mentioned above for skid roads under tractor logging) where burning is scheduled past the wet season following logging. Where needed, temporary blocks would be placed to eliminate wet season use of these roads prior to decommissioning.

e. Proposed Dust Abatement

Dust created from log hauling traffic on roads would be abated when conditions warrant in order to reduce driving hazards and protect the fine materials which bind the road surface rock thus increasing its longevity. Dust abatement would be in the form of water, lignin, or reduced vehicle speed.

f. Wildlife Trees and Dead and Down Material

All snags greater than 14" DBH would be reserved from cutting and removal in all units, unless they pose a safety hazard. If a snag is felled in the course of operation it will remain on site. An additional 3 large poorly formed and/or defective trees per acre would be marked as green wildlife tree to



contribute to the future snag component. If designated snag wildlife trees need to be cut due to worker safety concerns the tree would be left in the unit and a replacement snag would be identified.

All pre-existing down woody material would be retained on the sale area. The coarse down woody debris (CWD) objective for commercial thin units would be to meet an average of approximately one half of the linear feet of the standards and guidelines described in the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl. It is anticipated that these goals would be met post-harvest due to typical slash loadings, breakage etc. If post harvest monitoring indicates that the site is deficit of CWD, additional trees may be felled to provide the ecological function of CWD.

In stands identified for a structural retention or regeneration harvest, the standard of 120 linear feet as outlined in the S&G and Resource Management Plan (RMP) would be adhered to. In order to meet the S&Gs it may be necessary to mark potential trees to contribute to the coarse woody objectives. These trees will be identified during the marking of the stand. These trees would be above the minimal number required for Structural Retention harvest and would remain standing unless post harvest monitoring (3 years) indicates the site is deficit of CWD in which time trees could be felled to provide the ecological function of CWD.

Targets for CWD are expected to be met within 3 years following harvest or treatment. This time lapse would allow some of the post treatment natural processes to occur that will contribute to CWD levels, such as snow break, windfall, top breakage etc.

#### h. Botanical Resource Protection

If any Survey and Manage Component 1 or 2 species are found in any units, a no-harvest, no-ground disturbance protection buffer will be implemented around each population. Actual buffer size will be dependent on microsite conditions required to maintain habitat as required by NFP Management Recommendations. No slashing and burning would take place within these buffers. For all protection buffers, trees will be directionally felled away from buffer edges.

If federal or state listed, candidate or Bureau Sensitive species are found, a minimum 100-foot radius no-harvest, no-ground disturbance protection buffer will be required. For other Special Status species, a protection buffer will be decided upon on a case-by-case basis, depending on the species' habitat requirements.

Burns in areas containing special status plant species would follow prescriptions that result in "cool" burns which minimize potential damage to plant populations. Prescribed fire operations would be done in manner which strives to reduce or eliminate burning through identified Special Status plant population areas depending on the adaptability of each species to fire. Prescribed fire contracts would articulate the necessary steps to reduce or eliminate fires in these sensitive areas.

#### i. Wildlife Resource Protection

If special status species are located within or adjacent to the sale area, established protection measures would be implemented.

Formal consultation with the U.S. Fish and Wildlife Service regarding T&E listed species has been completed. Additional consultation would be conducted if:

- (1) New information reveals that the effects of the proposed action may affect listed species or critical habitat in a manner or to an extent which was not considered in the biological opinion.
- (2) The proposed action is subsequently modified which causes an effect to a listed species or critical habitat in a manner or to an extent not considered in the biological opinion:
- (3) A new species is listed or critical habitat is designated that may be affected by this action.

Located Del Norte salamander sites would receive a one tree width no harvesting or vegetation treatment buffer. Activities that would directly disrupt the talus layer would be avoided (*e.g.*, skid roads or yarding corridors). Precommercial thinning, slashing and prescribed burning would not be implemented within the buffers in order to maintain suitable microclimate for this species. Trees would be directionally felled away from these buffers.

S&M mollusc sites will be buffered according to accepted standards. Buffer size and strategy will be species and site specific per the management guidelines in effect at the time of buffer delineation. Activities that would directly disrupt the surface would be avoided, such as skid roads or yarding corridors. Precommercial thinning, slashing and prescribed burning would not be implemented within the buffers in order to maintain suitable microclimate for these species. Trees would be directionally felled away from these buffers.

Natural meadows and grasslands greater than 1 acre in size will receive a potential site class tree length no harvest buffer around the perimeter to maintain thermal and hiding cover for big game species unless otherwise identified in the document.

All activities including timber harvesting, burning and young stand development within a tree length buffer of snags occupied by bats will be restricted year-round. Mine adits occupied by bats will receive a 250' foot "no action" buffer. All activities including timber harvesting, burning and young stand development would be precluded.

## **Chapter 3**

### **Environmental Consequences**

#### **A. Introduction**

Only substantive site-specific environmental changes that would result from implementing the proposed action or alternatives are discussed in this chapter. If an ecological component is not discussed, it should be assumed that the resource specialists have considered affects to that component and found the proposed action or alternatives would have minimal or no effects. Similarly, unless addressed specifically, the following were found not to be affected by the proposed action or alternatives: air quality; areas of critical environmental concern (ACEC); cultural or historical resources; Native American religious concerns; prime or unique farmlands; flood plains; endangered, threatened or sensitive plant, animal or fish species; water quality (drinking/ground); wetlands/riparian zones; wild and scenic rivers; and wilderness.

This project is not located within the Oregon State Coastal Management Zone (CMZ). Unless otherwise noted it has been judged not to have any direct affects on the resources within the management zone nor has it been identified by the State of Oregon's LCDC as a project (by type and geographic location) outside of the CMZ but still needing a consistency review. Thus a consistency determination and review by the State of Oregon LCDC is not needed.

General or "typical" affects from projects similar in nature to the proposed action or alternatives are also described in the EISs and plans this EA tiers to.

#### **B. Site Specific Beneficial or Adverse Effects of the Alternatives**

##### **1. Introduction**

The Granite Horse project is primarily located in the Jumpoff Joe 5<sup>th</sup> field watershed. The Jumpoff Joe watershed is approximately 69,382 acres in size of which 21,456 acres (31%) is administered by the BLM. A small portion of it the project area is located in the Rogue - Grants Pass 5<sup>th</sup> field watershed . This watershed is approximately 53,640 acres in size of which 12,539 acres (23%) of the watershed is public land administered by the BLM.

Table 3-1 summarizes the acreages of some of the proposed treatments based on the more comprehensive information in the Tables in Appendix B. It provides some of the context for assessing environmental effects of the Granite Horse proposals.

<p align="center"><b>Table 3-1: Treatment Summary</b>  <i>Summary of proposed vegetation treatments based on Tables B1, B2 and B3</i></p>		
<i>Proposed Treatment</i>	<i>Alternative 2 (acres)</i>	<i>Alternative 3 (acres)</i>
Deferred (unit acres)*	8 (along scenic trail)	8 (along scenic trail)
Deferred (harvest acres)*	8 (along scenic trail)	8 (along scenic trail)
Brushing	129	129
Pre-Commercial Thin	1,034	1,034
Prune	190	190
(CTB/LGS)* *	0	325
Commercial Thin/ Group Selection (CT/GS)	1,609	1,284
Structural Retention	452	452
Special Forest Products ***	2,061	2,061
Riparian Reserve	976	976
Wildlife Burn	470	470
Hazard Reduction Burn	2,099	2,099

\* These figures do not include acres that will be deferred or constrained in order to protect the various survey and manage species. Areas and resultant acres will be set during project implementation based on survey results and the management guidelines for the particular species.

\*\* Commercial thin predominately *from below* with a *limited* Group Selection (CTB/LGS). Less trees will be harvested than under a CTGS prescription.

\*\*\* Acres available for entry. Actually entry will be limited by stand prescription, access, and availability of products.

## **2. Resource: Soil / Water**

### **a) Affected Environment**

This project is located in six 6<sup>th</sup> field watersheds, four in the Jumpoff Joe watershed and two in the Rogue - Grants Pass watershed. The sixth field watersheds are:

- 1) Upper Jumpoff Joe Creek
- 2) Middle Jumpoff Joe Creek
- 3) Jumpoff Joe - Bummer
- 4) Louse Creek (tributary to Jumpoff Joe Creek)
- 5) Rogue Grants Pass, Upper
- 6) Rogue Grants Pass, Lower

Generally, the 6<sup>th</sup> field WS's are characterized by long, narrow to wide valley bottoms with moderately steep to very steep ridges dissected by tributary streams on two sides in four of the WS's and on three sides on Upper Jumpoff Joe Creek and Louse Creek WS's. The Rogue Grants Pass 6<sup>th</sup> field WS's include the Rogue River in the lower Valley of the Rogue and the Grants Pass area. Here the valley bottom, made up of flood plain, stream terraces, and alluvial fans, is relatively wide.

Highest elevation is slightly greater than 4,400 feet. The lowest elevation is where the Rogue River meets Jumpoff Joe Creek at roughly 800 feet. Main streams meander in the valley bottoms with class 3 and 4 tributaries that flow off the ridge slopes. Annual precipitation, in the form of rainfall with some snowfall at higher elevations, averages 32 inches in the area where Jumpoff Joe Creek and Louse Creek meet and the west Grants Pass area to 50 inches in the upper elevations of the Upper Jumpoff Joe Creek WS.

The dominant soils in the project area are as follows (SCS, Soil Survey of Josephine County):

- Beekman-Colestine (6F,7F) on steep sloping side slopes and ridge tops; Beekman-Colestine are moderately deep and deep, well drained, extremely gravelly loam and gravelly loam.
- Cornutt-Dubakella (19D, 20F, and 21F) on moderate slopes; Cornutt-Dubakella are deep and moderately deep, well drained cobbly clay loam and very cobbly clay loam with underlying cobbly clay and very cobbly clay. Parent material is serpentine influenced.
- Jumpoff clay loam (49D, 49E, 50F, 51F) on moderate to steep slopes. Jumpoff is deep, well drained, clay loam over clay. The underlying clay occurs at depths greater than 15" and is slowly permeable.
- Manita loam (53D, 53E, 54F, 55F) on moderate to moderately steep slopes. Manita is deep, well drained, loam over clay loam with underlying clay occurring at depth. The underlying clay is moderately slowly permeable.
- Pearsoll-Rock outcrop complex (58F) on moderate to steep slopes. Shallow and well drained serpentine soil with stony clay loam surface over extremely cobbly clay subsoil. The soil has slow permeability and low available water capacity. Serpentine rock outcrops are common. This is usually non-forest (Jeffrey Pine-Savannah), wildlife habitat, proposed for burning.
- Vannoy silt loam and Vannoy-Voorhies complex (78F, 79F) on moderate slopes; Vannoy and Voorhies are moderately deep, well drained, silt loam and gravelly loam over clay loam and gravelly clay loam. These soils have low to moderate forest productivity.

Soils of particular concern are the highly erosive Siskiyou and the serpentine influenced Cornutt-Dubakella. Siskiyou has a high susceptibility to erosion (due to low cohesiveness and adhesiveness) and has a thin surface layer which limits productivity. Maintenance of surface cover is critical to keep this soil from eroding and productive. The PDF which calls for seeding, mulching, and covering with slash on steeper slopes of erosion sensitive soils will alleviate this potential problem.

Dubakella, with its clayey subsoil, is susceptible to disturbance/compaction (due to high seasonal moisture content just above the subsoil that limits bearing capacity) and has limited productivity (low calcium to magnesium ratio). When combined with Cornutt it can be susceptible to mass movement, sliding and slumping. Dubakella and Cornutt soils are located in T34S,R6W portions of section 26; T34S,R5W portions of sections 19, 20, 29, 30, 31; and T35S,R5W portions of sections 17, 18, 19, 20, 21, 29. The PDF which calls for moisture measurements to be taken at 8 to 10 inch depth will result in less disturbance by waiting until reduced moisture content occurs and bearing capacity increases.

The Rogue River from the Applegate River upstream to Evans Creek is currently listed as Water Quality Limited (Ref. 1998 Oregon Section 303(d) List) due to high summer fecal coliform counts, and warm summer temperature (moving 7 day average of daily maximums of greater than 64° F). Jumpoff Joe Creek and Louse Creek are also on the 303(d) list for warm summer temperature. No other streams in the project area are currently on the 303(d) list.

The upper (east) portions of the Jumpoff Joe 5<sup>th</sup> Field Watershed are deferred from ground disturbing activity under the RMP. The deferred area is to be reviewed by 2003 to determine if recovery from the high cumulative effects levels is sufficient to allow for further management.

As established by the RMP (June 1995), deferred watersheds were “identified as having high cumulative effects (CE) from management activities , including timber harvest and other surface-disturbing activities for ten years, starting from January 1993. Management activities of a limited nature...could be permitted in these areas if the effects will not increase the cumulative effects ”. Two areas within the upper 5<sup>th</sup> field watershed are listed in the RMP as deferred: “Upper Jumpoff Joe Creek/ Upstream of Water Branch Creek and Louse Creek/ Upper Louse Creek”. These correspond to several 7<sup>th</sup> field watersheds located in the far east end of the 5<sup>th</sup> field Jumpoff Joe watershed. There are two categories of cumulative effects that fall within the high range:

CE Category	High Range	Existing Range
Compaction	> 12%	13 - 18
Road Density(Mi./Sec.)	> 4.0	6.1 - 11.9

The high CE categories above relate to flashy stream flows (increased peak stream flows and slightly reduced low stream flows). They also may result in increased erosion and stream sedimentation due to increased concentrated surface runoff and resulting erosive energy.

Early seral treatment, as proposed in the Granite Horse Project, will result in no additional compaction or road density. Fuel Hazard Reduction treatments will cause no surface disturbance in the deferred watershed by increasing leave vegetation and woody debris to protect against erosion, also there will be no heavy equipment entry that would cause any additional compaction.

#### b) Environmental Effects

##### 1) Short and Long Term

Table 3-2 provides ratings for local hydrologic effects as compared to the current condition for the various practices within the proposed alternatives. They are based on a consideration of all vegetative treatments in Tables B-1, B-2 and B-3.

**Table 3-2: Hydrologic effects**

6 <sup>th</sup> Fld. WS	Term	Type of Effect	Alt. 1	Alt. 2	Alt. 3
Upper Jumpoff Joe Creek	Short (1-5 yrs)	Disturbance / Erosion	0	Min-	Min-
		Added Compaction	0	Min.+**	Min.+**
		Productivity	0	Min.-	Min.-
		Sedimentation from main skid/ haul roads & landings	0	Slight+	Slight+
	Long (5-20 yrs)	Disturbance / Erosion	Min.-*	0	0
		Compaction	Min.-*	Min.+**	Min.+**
		Productivity	Min.-*	0	0
		Sedimentation from main skid/ haul roads & landings	Min.-*	Slight+	Slight+
Middle Jumpoff Joe	Short (1-5 yrs)	Disturbance / Erosion	0	Min.-	Min..-
		Added Compaction	0	0	0
		Productivity	0	Min.-	Min.-
		Sedimentation from main skid/haul roads & landings	0	Min-	Min.-
	Long (5-20 yrs)	Disturbance / Erosion	Min.-*	0	0
		Compaction	Min.-*	0	0
		Productivity	Min.-*	0	0
		Sedimentation from main skid/haul roads & landings	Min.-*	0	0
Jumpoff Joe Bummer	Short (1-5 yrs)	Disturbance / Erosion	0	Min.-	Min.-
		Added Compaction	0	0 to Min.+**	0 to Min.+**
		Productivity	0	Min.-	Min.-
		Sedimentation from main skid/haul roads & landings	0	Min.-	Min. -
	Long (5-20 yrs)	Disturbance / Erosion	0	0	0
		Compaction	0	Min.+**	Min.+**
		Productivity	0	0	0
		Sedimentation from main skid/haul roads & landings	0	0	0
Louse Creek	Short (1-5 yrs)	Disturbance / Erosion	0	Min.-	Min.-
		Added Compaction	0	0 to Min.+**	0 to Min.+**
		Productivity	0	Min.-	Min.-
		Sedimentation from main skid/haul roads & landings	0	Min.-	Min.-
	Long (5-20 yrs)	Disturbance / Erosion	Min.-*	0	0
		Compaction	Min.-*	0	0
		Productivity	Min.-*	0	0
		Sedimentation from main skid/haul roads & landings	Min.-*	0	0

6 <sup>th</sup> Fld. WS	Term	Type of Effect	Alt. 1	Alt. 2	Alt. 3
Rogue Grants Pass Upper	Short (1-5 yrs)	Disturbance / Erosion	0	Min.-	Min.-
		Added Compaction	0	0	0
		Productivity	0	Min.-	0
		Sedimentation from main skid/haul roads & landings	0	Min.-	Min.-
	Long (5-20 yrs)	Disturbance / Erosion	Min.-*	0	0
		Compaction	Min.-*	0	0
		Productivity	Min.-*	0	Min.+
		Sedimentation from main skid/haul roads & landings	Min.-*	0	0
Rogue Grants Pass Lower	Short (1-5 yrs)	Disturbance / Erosion	0	Min.-	Min.-
		Added Compaction	0	0	0
		Productivity	0	0	0
		Sedimentation from main skid/haul roads & landings	0	Min.-	Min.-
	Long (5-20 yrs)	Disturbance / Erosion	Slight-*	0	0
		Compaction	Min.-*	0	0
		Productivity	Min.-*	0	0
		Sedimentation from main skid/haul roads & landings	Min.-*	0	0

Footnote: Effects ratings - (-) = negative effect; (+) = positive effect; (0) = neutral effect

Min. = minimal; very little, limited to few sites;

Slight = little distributed over most affected area or high on local site;

Moderate = mid level distribute over most affected area;

\* Assumes high fire hazard and risk for no action alt.

\*\* Assumes existing skid roads designated then decompacted.

The above effects are considered for the vegetative treatments shown on tables in the appendix. It also includes related road work. Other proposed actions would have a minimal short and long term effect.

The fuel hazard reduction treatment proposed on T35S,R5W, Section 31(Unit 004) is located in steep granitic soil. Hand pile burning is proposed on this site. This will minimize impacts to the natural organic cover.

Note that sedimentation effects in the Upper Jumpoff Joe watershed is Slight+. This is due to the improvement that would take place under this action in the Horse Creek vicinity from decommissioning the existing road in the riparian reserve and improving the power line road.

There are areas of granitic and serpentine influenced soils that are proposed for treatment. However they amount to less than 0.5% of each of the sixth field WS's. Also, project features for cover and soil moisture testing in harvest units will minimize disturbance, erosion, and sedimentation.

Horse Creek Ridge Trail building would have short term site specific minimal erosion and sedimentation with "0" long term erosion and sedimentation effect. This reflects the ridge top placement and narrowness of the trail. This assumes that the trail will be used as designed for hiking and horse back riding, with no use by motorized vehicles.



Of the proposed early seral stand treatments, none will result in any more than minimal effects. There will be no to very little ground disturbance. All treatment will be by hand labor.

The proposed vegetation treatment alternatives should have no effect on summer stream temperatures, existing shade will be retained over all Class 1 through Class 4 streams.

### c) Cumulative Effects

Three indicators are used to index the existing conditions (cumulative effects of past activities on watershed conditions). The condition of each of these are:

Table 3-3: Watershed Conditions					
6 <sup>th</sup> Field WS	% Early Seral	% Compaction	% TSZ Open.	Road Density (mi/sec)	Comments
Upper J. Joe-(Est.) % Add: Alt 2 Alt 3	Mod. 1 1	High 0 0	Mod 0 0	High 0 0	59% Non-BLM land
Mid.J. Joe (Est.) % Add: Alt 2 Alt 3	Mod. <1 <1	High 0 0	Low 0 0	High 0 0	71% Non-BLM land, I-5 included in road density
J. Joe- Bummer (Est.) % Add: Alt 2 Alt 3	Mod. <1 <1	Mod.. 0 0	Low 0 0	High 0 0	79% Non-BLM, dense rural development accounts for high road density
Louse Ck.(Est.) % Add: Alt 2 Alt 3	Mod. <1 <1	High 0 0	Low 0 0	High 0 0	73% Non-BLM; dense rural development, 3 miles of I-5, high road density in Upper Louse coupled for high road density
Rogue G.P Up.(Est.) % Add: Alt 2 Alt 3	Mod. 0 0	Mod. 0 0	Low 0 0	Mod 0 0	59% Non-BLM land
Rogue G.P. Lo. (Est.) % Add: Alt 2 Alt 3	Mod. 0 0	High 0 0	Low. 0 0	High 0 0	89% Non-BLM land, I-5 and dense rural development account for high road density

The four indices included above are indicators of correlative hydrologic responses:

1) *Percent early seral* represents the areal extent of early seral vegetation on forest land. The above estimates are at moderate levels before and after this proposal. The hydrologic response to high amounts of early seral vegetation is increased stream yield due to reduction of evapotranspiration rates.

2) *Percent compaction* represents the areal extent of compaction. The above estimates are moderate (6 to 12%) to high levels (>12%). The hydrologic response of high amounts of compaction are increased surface flows due to a decrease in infiltration. It also affects productivity as density of the subsoil is increased root growth rates are reduced. There will be no additional compaction caused by this project.

3) *Percent TSZ* openings represents the percent of the watershed that are openings within the Transient Snow Zone. The TSZ is the elevational band (3,000 to 4,500 feet above sea level) that is most susceptible to rain on snow events. The hydrologic response in TSZ openings is high peak flows due to direct input of runoff from rain and melting snow. No treatment units are proposed within the TSZ.

4) High *road density* (4+ miles of road per square mile, or section, of land) correlates to an increase in mid peak stream flows and slight reduction in low stream flows due to interruption of shallow ground water and routing of flow off the roads to streams by way of the natural drainage system. All new roads to be placed for this project will be decommissioned with the exception of the east Horse Creek Road which will replace portions of the power line road. There will be no net increase road density in any of the 6<sup>th</sup> Field WS's.

There would be no significant cumulative effective on water quality or quantity at the either the 6<sup>th</sup> or 5<sup>th</sup> field watershed level.

Concerning 303(d) Water Quality Limited listing of streams in the 5<sup>th</sup> and 6<sup>th</sup> Field watershed's, this proposal would have no effect on summer temperatures for the Rogue River, Jumpoff Joe and Louse Creeks. This proposal would also not add to summer fecal coliform counts for the Rogue River. In other words, this project would not add negative effects that would contribute to the water quality limits for 303(d) listed stream in these 5<sup>th</sup> Field WS's.

### **3. Resource: Vegetation**

#### **a. Affected Environment**

##### **1) Landscape Trends**

The historical natural disturbance pattern created by re-occurring wildfires has been affected by successful fire suppression efforts. Fire suppression has shifted species composition from pine and oak to stands that are dominated by Douglas-fir. Stand densities of trees and shrubs have increased to levels that slow seral stage progression.

Douglas-fir pole stands with high stem counts have developed within the watershed. These have crowded out less shade tolerant species such as Ponderosa pine, Sugar pine and oaks. Stands consisting of dense poles or small diameter trees are more vulnerable to stand replacement wildfire.

Past forestry practices, particularly on non-federal ownerships, in the watershed have tended to simplify forest structures and alter the mix of seral and age class distributions. Ponderosa and Sugar pine, California Black Oak and Pacific madrone are important mid-seral species components of the forests that develop in the less dense and more open canopy conditions that existed in the forests of the watershed prior to fire suppression.

#### **b. Environmental Consequences**

##### **1) Alternative 1: No Action**

a) Short and Long Term Effects

Current trends of reduced tree crown ratios and slow stand growth would continue. If the current condition and vegetation trends continue, many high density mid-seral stands will remain in the lower range of merchantability. Without disturbance, slow diameter growth will prolong the time until the densely growing small diameter trees attain large and/or merchantable diameter. These stands are dense enough to restrict the development of the structure and differentiation necessary to provide quality late-successional forest habitat or to provide quality merchantable trees for future harvest. High rates of mortality in trees with diameters less than 6" DBH will continue. Forest stands (e.g., 35-5-9-004) with high stem counts and small diameters would not reach commercial size (8" DBH) even with twenty years of growth. The area would remain a high hazard for a stand replacement fire. If the stand replacing fire occurs, mid and mature seral stages could be reverted back to early seral stages if the intensity is high.

b) Cumulative Effects

The area would be vulnerable to repeated stand replacement forest fires whenever fire hazard rebuilds. There will be a continued loss of large hardwoods and pine species due to competition. Crown size and height-diameter ratios in many stands in the Granite Horse project area are currently approaching a point that will render them incapable of a thinning growth response sufficient to maintain healthy, vigorous trees and stands. As a consequence of this, opportunities for effective stand treatments to maintain health and vigor may diminish rapidly if stands are left untreated over the next 5-10 years.

2) Alternative 2: Proposed Action

a) Short and long term

The structural retention treatment will regenerate new stands beneath the older, slower growing, large trees that will result in more stands with productive understories.

The proposed thinning treatments would develop more multi-canopy structure than if left untreated. Canopy closure will average 40% over the harvested area. The proposed action will cause the necessary disturbance to provide growing space for additional canopy layers to form due to variability in spacing and species selection criteria being emphasized. Growth rates which are currently slowing will increase. Tree vigor and resiliency to insect and disease attack will be enhanced as competition is decreased. There will be an increased commodity potential on treated lands.

Brushing, precommercial thinning, and thinning in young natural stands, will concentrate the moisture, light and growing space on fewer trees. Both the release and thinning treatments will advance small diameter conifers more quickly into or through the pole stage than in an untreated stand.

b) Cumulative Effects

The reduction of stand densities, with associated fuel treatments, across the landscape will lower the probability of a stand replacement fire. Future commodity potential will be enhanced. In commercial thin and group selection units, stands will generally be managed to retain or encourage the development of mature forest characteristics by improving canopy layers and to minimize

fragmentation while meeting the overall objectives which include harvesting timber. Most stands within this proposed treatment area will be redirected to develop multiple canopy, species, and age/diameter class conditions. Variability in spacing and species selection criteria will be emphasized.

3) Alternative 3: Proposed Action

a) Short and long term

Effects would be similar to effects for alternative 2 with the exception of effects on 330 harvest acres specific to Alternative 3 in the following units: 34S-05W-19-010 (30 ac), 34S-05W-19-011 (30 ac), 34S-05W-30-002 (100 ac), 35S-05W-15-001 (20 ac), 35S-05W-33-010 (70 ac), 35S-05W-33-004 (30 ac), 35S-05W-34-004 (50 ac), and 35S-05W-34-005 (21 ac).

In these stands stem density will not be reduced to levels where individual tree growth is maximized. Maximum individual tree growth benefits of density reduction would be delayed for those acres that would be left thinned at a 50% canopy level and higher stand density indexes. However, under the thinning method proposed in alternative 3 more trees with potential to respond to release will remain. Based on computer simulations using ORGANON, overall stand growth over the next fifteen years would increase from five to fifteen percent over alternative 2. There is not a substantive difference of MBF volume being harvested between alternative 2 and 3.

Alternative 3 focuses more harvest of the understory strata and less harvest in the overstory strata. The result will be a more pronounced mosaic pattern in the canopy where small openings will occur more frequently due to a high percentage of trees in the smaller diameter classes being removed. The proposed treatment in alternative 3 will result in a slightly higher assortment of stand densities, ranging from free-to-grow conditions to conditions favorable for formation of snags and CWD in larger tree size classes.

b) Cumulative Effects

Units 34S-05W-19-010, 34S-05W-19-011, 34S-05W-30-002, 35S-05W-15-001, 35S-05W-33-010, 35S-05W-33-004, 35S-05W-34-004, and 35S-05W-34-005 would be candidates for future commercial harvest 5-10 years sooner than stands in alternative two.

**4. Resource: Fisheries / Aquatic**

a. Affected Environment

Jumpoff Joe and Louse Creeks are the major streams within the proposed project area. Chinook salmon are apparently limited to the lower reaches of Jumpoff Joe Creek outside of the project area. Coho salmon, steelhead, cutthroat trout, Pacific lamprey and sculpin are found throughout the project area in both Jumpoff Joe and Louse Creeks, as well as in many smaller streams. The fish-bearing tributaries to Jumpoff Joe and Louse Creeks which are affected by proposed actions include Bummer, Cove Branch, Harris, Horse, Jack, Morris, Schoolhouse, and Soldier Creeks, and Shorthorn Gulch. Proposed actions in the Rogue-Savage Creek watershed affect Skunk and West Fork Jones Creeks, both of which drain to the Rogue River. The Rogue supports chinook and coho salmon, steelhead, cutthroat trout, Pacific lamprey and sculpin. Also found in the project area are Klamath small-scale

sucker, speckled dace, smallmouth bass, redbreasted sunfish and several sunfish species. There are numerous non-fish bearing streams in the project area which flow into either Jumpoff Joe and Louse Creeks, the Rogue River or their tributaries.

Bummer Creek flows into Quartz Creek, which was identified by the Governor's salmon recovery plan as a core habitat area of critical importance to the maintenance of coho salmon populations. Coho salmon are federally listed as threatened. Jumpoff Joe and Louse Creeks were identified by the Governor's steelhead recovery plan as high value steelhead streams in the Rogue Basin. Steelhead is a federal candidate species in Oregon. According to the salmon recovery plan, salmon production and survival in Quartz Creek are limited by lack of large wood in the stream and riparian areas, lack of riparian diversity, high summer water temperatures, poor winter habitat, and, to a lesser extent, by upland sedimentation. Currently there is an average of about 20 key pieces of large wood per mile of stream. The ODFW desirable habitat benchmark is >40 pieces per mile. The Oregon Department of Environmental Quality, based on a highest seven day maximum temperature average, has designated Quartz Creek as water quality-limited. The Oregon DEQ water quality standard is 64°F.

The Oregon Department of Fish and Wildlife (ODFW) has identified fish habitat benchmarks. These benchmarks are used herein in assessing if a component of fish habitat is a limiting factor in trout or salmon production or survival. In the streams of the project area, large woody debris levels, pool depth and frequency, water flow and temperature, and riparian condition have been identified as limiting for salmon and trout production and survival.

Salmon production and survival in Louse Creek is limited by lack of pools, lack of large woody debris, and inadequate riparian canopy. The ODFW benchmark for pool habitat is that pools comprise > 35% of stream area, and adequate riparian canopy is identified as coverage > 75%. Erosion of decomposed granite into the stream decreases the quality of spawning gravels. BLM stream temperature monitoring on Louse Creek from 1996-1998 revealed summer maximum seven-day averages as high as 71°F. Stream invertebrate monitoring conducted on Louse Creek in 1993 and 1997 showed that summer water temperatures were lethal to most cold water invertebrates and non-supportive of salmonids. Embeddedness and siltation of stream substrate were high, channel complexity was low.

Salmon production and survival are limited in Jumpoff Joe Creek by inadequate amounts of large woody debris, sparse riparian canopy, and poor summer water quality. Key pieces of large woody debris are almost totally absent in the majority of stream. Riparian canopy ranges from 30-60% areal coverage. Jumpoff Joe Creek has summer water temperatures which exceed the Oregon DEQ water quality standard of 64°F. BLM stream temperature monitoring on Jumpoff Joe Creek from 1996-1998 revealed summer maximum seven-day averages as high as 78°F near Shorthorn Gulch, and as high as 67°F further upstream in the watershed. Irrigation withdrawals contribute to the dewatering of the stream at the mouth in the summer.

b. Environmental consequences

1) Alternative 1: No Action

a) Short term

(1) Roads

Roads in Shorthorn Gulch, North Fork Cove Branch Creek, and Horse Creek presently produce a continual sediment delivery and accumulation in Shorthorn Gulch, North Fork Cove Branch Creek, and Horse Creek. Under the no action alternative to major adverse impacts to fish will continue. Excessive sediment delivery to streams will continue for several years. The downstream effect would be a reduction in survival and production of salmonids. Excessive sediment delivery will suffocate eggs in the gravels and cause a direct mortality. Additionally, excessive sediment delivery will produce indirect mortality to juvenile fish. Adult fish will also have migration and spawning impaired.

(2) Harvest

Under the no action alternative for thinning in the riparian reserve, the current vegetation trends will continue. There would be little impact on the current fisheries conditions in the short term (0-5 years). Dense stands which are currently slowly recovering from past logging practices would continue to be lacking in diverse structure and shade-producing canopy. As the seral stages continue to advance in the riparian reserve, the size and amount of wood added to the stream would negligibly increase in the short term (0-5 years). Old logging roads and trails in the riparian areas which are compacted and not yet revegetated would remain in an unrecovered state. Salmonid production and survival would continue to be limited by lack of large woody debris, the associated stream complexity, and summer water temperatures.

b) Long term

(1) Roads

The types of long term adverse impacts are the same as for short term impacts. Overall adverse effects include a greater mortality to the fish population and degradation of habitat over a greater time period. There are no beneficial impacts from this alternative.

(2) Harvest

As the seral stages continue to advance in the riparian reserve, the size and amount of wood added to the stream would increase in the long term (50-100+ years). This would result in increased pool frequency and depth, improved stream complexity, and an increase in rearing habitat quality. Riparian logging roads and trails that are within intact stands would begin to decompact, revegetate, and progress toward recovery. Salmonid production and survival would increase as riparian structure improves, summer water temperatures decrease, and stream habitat becomes more complex.

c) Cumulative effects

(1) Roads

The cumulative direct and indirect adverse impacts are the greatest in this alternative because of the synergistic effect from perturbations to salmonid populations and habitat throughout Jumpoff Joe Creek Watershed and tributaries to the Rogue River. A substantial increase in sediment delivery at each site will produce substantial adverse effects if no action is taken to remedy the problem. No short or long term or cumulative effects have been quantified.

## (2) Harvest

Similar habitat conditions limit salmon production and survival in the two 5<sup>th</sup> field watersheds that contain the proposed project. In both Jumpoff Joe Creek and Rogue River/Savage Creek Watersheds, poor riparian structure, inadequate large woody debris, elevated summer water temperatures, and sedimentation have contributed to a decline in salmon populations. Riparian areas that are slowly recovering from the effects of past logging on federal land will continue on this course and at least maintain the degraded or at-risk habitat conditions that currently exist. Reasonable and foreseeable events which will have an impact on the watersheds include two Josephine County timber sales and a private timber sale anticipated within 1-2 years. The cumulative adverse impact will be the continued decline toward degraded habitat due to increasing summer water temperatures, increasing sedimentation, reduced riparian condition, and diminished stream complexity.

### 2) Alternatives 2&3: Proposed Action

#### a) Short term

##### (1) Roads

The proposed action alternatives include road activities on Shorthorn Gulch, North Fork Cove Branch Creek, and Horse Creek. Maintenance is proposed for roads on Shorthorn Gulch, North Fork Cove Branch Creek, and Horse Creek. On Horse Creek, road maintenance is proposed on 34-5-29, a mid-slope road, and on the power line road, which runs along Horse Creek. Decommissioning with additional restorative measures would be done on a degraded road which runs along the west side of Horse Creek through BLM land.

Any sediment delivery effects to the stream will cause highly localized, unmeasurable, negligible, short term adverse impacts at the project level (6th and 7th field scales) and fifth field scale. The minimal increase of sediment delivery produced from these proposed actions are not expected to appreciably affect the survival or production of salmonids. It is anticipated that the long term beneficial effects will maintain downstream salmon survival and production and far outweigh any short term adverse effects. The reduction in sediment delivery will aid egg and juvenile fish survival because the risk of egg suffocation will be lower. The risk of direct or latent mortality to juvenile fish from sediment delivery is substantially minimized when compared to the no action alternative. These effects are inclusive for direct and indirect adverse and beneficial effects to fish.

There will be a substantial long term reduction of sediment resulting in a beneficial effect for the aquatic resources. Ripping compacted skid roads will increase soil absorption or infiltration. Installation of gates will reduce vehicle traffic, excluding occasional motorcycle, mountain bike, horseback and ATV use. During road renovation cross drain culverts may be replaced and sized according to 100-year flood criteria. Road decommissioning will not affect the floodplain connectivity because riparian reserves will be maintained and stream channels will not be altered.

## (2) Harvest

Thinning prescribed within Riparian Reserves is intended to meet the objectives of accelerating the successional rate of early seral riparian vegetation and increasing the potential for long term

recruitment of large snags and coarse wood in the riparian area and within the stream. Adverse effects to streams from thinning within the Riparian Reserve are anticipated to be highly localized, unmeasurable, negligible, short term impacts at the project level (6th and 7th field scales) and fifth field scale. Any minimal increase of sediment delivery produced from these proposed actions are not expected to appreciably affect the production or survival of salmonids. It is anticipated that the long term beneficial effects will maintain downstream salmon production and survival and far outweigh any short term adverse effects. Increased canopy will contribute to lowering summer water temperatures. Increased recruitment of large woody debris into streams will improve channel complexity and instream habitat. Improved rearing habitat increases the survival of juvenile salmonids. These effects are inclusive for direct and indirect adverse and beneficial effects to fish.

b) Long term

(1) Roads

Sediment delivery effects to the stream are the same for short and long term adverse effects. It is anticipated the net long term beneficial impacts from stabilizing road erosion, and efforts to decrease runoff rates will maintain downstream salmon production and survival, and far outweigh any adverse effects. These effects are inclusive for direct and indirect adverse and beneficial effects to fish.

Road decommissioning will help restore aquatic habitat by decreasing sediment delivery to streams. The decommissioning of the road on the west side of Horse Creek through BLM land is anticipated to decrease the use of the road portions which are on private land to the north and south. Additionally, decommissioning roads will increase infiltration and decrease overland flows. Riparian road decommissioning will have a substantial beneficial effect. There will be a negligible or unmeasurable increase in sediment delivery at the fifth field watershed scale.

(2) Harvest

The prescription calls for actions within the Riparian Reserves which will accelerate the development of late-successional or old growth forest conditions. Adverse effects to the stream are the same for the short and long term scales, that is, highly localized, unmeasurable, negligible, short term adverse impacts at the project level (6th and 7th field scales) and fifth field scale. The long term benefits to aquatic resources will far outweigh any adverse effects. Late-successional conditions in the riparian reserves would be characterized by increased structural diversity, canopy, and large woody debris recruitment, with improved stream complexity and water quality. The use and subsequent decommissioning of pre-existing but unrecovered skid roads in the riparian provides a long term benefit for aquatic resources by reducing sediment delivery and re-establishing canopy on riparian roads. Decompacting skid roads will increase soil absorption and infiltration. Salmon production would be likely to increase as sediment reduction in spawning gravels increases egg survival. Improved rearing habitat resulting from lower summer water temperatures and increased pool quality would increase the probability for juvenile survival. These effects are inclusive for direct and indirect adverse and beneficial effects to fish.

c) Cumulative effects

(1) Roads



The cumulative direct and indirect adverse effects are minimal or negligible in these alternatives because of the effort to alleviate sediment delivery. The adverse effects on fish from the current condition extend to the Rogue River, especially at the fifth field scale. The minimal increase of sediment delivery produced from these proposed actions is not expected to appreciably affect the production or survival of salmonids. The cumulative beneficial effects are greater than the minimal short term adverse effects in these alternatives because the actions will maintain salmon production and survival and habitat. Excess sediment delivery from the proposed actions will be halted or substantially minimized. No short or long term or cumulative effects have been quantified.

## (2) Harvest

The cumulative direct and indirect adverse effects are minimal or negligible in these alternatives because of the efforts to eliminate sediment delivery mechanisms and disturbance through project design features. The adverse effects on fish from current riparian conditions extend to the Rogue River, especially at the fifth field scale. Similar habitat conditions limit salmon production and survival in the two 5<sup>th</sup> field watersheds that contain the proposed project. In both Jumpoff Joe Creek and Rogue River/Savage Creek Watersheds, poor riparian structure, inadequate large woody debris, elevated summer water temperatures, and sedimentation have contributed to a decline in salmon populations. Reasonable and foreseeable events which will have an impact on the watersheds include two Josephine County timber sales and a private timber sale anticipated within 1-2 years. The adverse impacts of actions outside federal lands are likely to contribute to the decline toward degraded habitat due to increasing summer water temperatures, increasing sedimentation, reduced riparian condition, and diminished stream complexity. However, if the proposed actions (Alternatives 2 or 3) are taken, riparian areas that are only slowly, if at all, recovering from the effects of past logging practices on federal land will have the opportunity for degraded or at-risk habitat conditions to recover. The cumulative beneficial effect within each fifth field will be in the form of increased large woody debris input in the upper portions of the watershed with potential for downstream delivery, improved salmonid egg and juvenile survival, and cooler water from the upper watersheds being delivered to the Jumpoff Joe Creek, Louse Creek, and the Rogue River in the summer.

## 5. Resource: Botany

### a. Affected Environment

The Granite Horse Landscape Management project has not been completely surveyed for botanical resources (as of 1/10/2000). Approximately 300 acres still need to be surveyed for vascular plants and should be completed by July 2000. The entire project area needs to be surveyed for Survey and Manage fungi species. Based on the current survey protocol, these will not be completed until early in calendar year 2001.

The habitats within the Granite Horse project are quite diverse due to the variety of substrates present (including peridotite rock outcrops and serpentine soils) and the variety of aspects present (which provide a wide range of moisture regimes). In the forested habitat, plant associations range from predominantly Douglas fir-Black Oak/Poison Oak to Douglas fir-Oregon Grape/Swordfern, Douglas fir-Oceanspray/Whipplevine and Douglas fir/Dry Shrub. All these associations can provide habitat for Survey and Manage species when moist late-successional forest conditions prevail. Six populations of *Cypripedium fasciculatum*, one population of *Allotropa virgata*, one population of *Dendriscoaulon*

*intricatum*, two populations of *Lobaria hallii* and one population of *Buxbaumia viridis* were found. All of these populations are within proposed harvest units.

The serpentine soils and peridotite rock outcrops provide habitat for a number of special status species. The Bureau Sensitive species, *Camassia howellii*, can only be found in the Jumpoff Joe and other watersheds nearby. It cannot be found in the Illinois Valley (where most serpentine endemics exist) making it quite unique within the project area. Twenty-nine populations of this species were found within the project area, some quite extensive in size. Most populations were located within habitat treatment areas or hazard fuel reduction areas, although a few were located on the edges of harvest units.

Other serpentine-related special status species found were one population of *Lewisia cotyledon* var. *howellii* (Bureau Sensitive), one population of *Limnanthes gracilis* var. *gracilis* (Bureau Sensitive) and two populations of *Silene hookeri* ssp. *bolanderi* (Bureau Assessment). The *Lewisia* population occurs on a serpentine rock outcrop along a proposed hiking trail. The other two species occur in hazard fuel reduction areas.

#### 1) Survey and Manage species management - Vascular Plants

*Cypripedium fasciculatum* (CYFA) habitat occurs primarily on moist, northerly aspects (anywhere from west to north to east slopes) in older forests with 60% to 100% canopy closure. This orchid species is very long-lived, perhaps as long as 95 years (Mgmt. Recommendations 1998), can take up to 15 years to emerge above ground, does not emerge every year and requires specific mycorrhiza\* for germination and establishment. *C. fasciculatum* occupies a range from central Washington to northern California with some scattered populations in the Rocky Mountains. The species sparsely covers this range and is currently considered threatened or sensitive in most states. It is a Bureau Sensitive species under BLM policy and a Species of Concern under the Federal Endangered Species Act, besides being a Survey and Manage (Strategy 1 and 2) species.

*Allotropa virgata* occurs in upland closed canopy pole, mature and old growth seral stages in various plant series. The largest populations occur in old growth and most are highly isolated from each other. The species ranges from British Columbia to California. The species requires coarse woody debris and it may not emerge above ground every year. This species is a Survey and Manage (Strategy 1 and 2) species.

The Management Recommendations for Vascular Plants (1998) states for *Cypripedium fasciculatum* that 1) habitat conditions be maintained or restored in population areas, 2) canopy closure be maintained at 60% or greater, 3) down logs, snags and duff layer be maintained for soil moisture and mycorrhizal associates, 4) activities that alter soil, duff, downed wood and mycorrhiza be avoided, 5) known sites be secured from prescribed fire, except in research areas, 6) population areas be large enough to maintain microclimate, 7) biological/ecological requirements at each life stage be managed and 8) environmental change be managed in such a way as to ensure evolutionary potential. Similar Management Recommendations for *Allotropa virgata* have been established but currently the range of these recommendations is outside of the Medford District BLM lands.

#### 2) Survey and Manage species management - Non-vascular Plants

*Dendroica caerulea intricatulum* (a Survey and Manage Strategy 1 lichen) is extremely rare. Although numerous populations have recently been found in the Picket Snake landscape management project area, this species does not occur as a common component within its range (from Alaska to northern California). It is found on oak species of 4-6" DBH within or adjacent to open conifer forests. It requires a source of humidity either from the conifer canopy itself or consistent fog. It is highly dependent on intact forest canopy to retain moisture. It does require open understory conditions, though. Dense understory could promote the growth of weedy mosses on tree trunks, which can out compete these lichens for available substrate. It is highly susceptible to air pollution such as smoke from fires. Management recommendations (awaiting final approval) require that its habitat/microclimate not be disturbed.

*Lobaria hallii* ( a Survey and Manage Strategy 1 lichen) can be found on black oak or madrone, primarily. It also tends to occur in open forest with a wet and/or fog driven moisture regime (Appendix J-2). It ranges from northern Alaska to central coastal California, but is rare in this portion of its range. Its management recommendations (also awaiting final approval) are similar to *Dendroica caerulea intricatulum*.

*Buxbaumia viridis* (a Protection Buffer moss) grows on very old, decaying logs and on mineral or organic soil in cool, shaded, humid locations at middle elevations. Its range is from British Columbia to northern California. The species is sensitive to changes in light level and microclimate caused by removal or thinning of canopy and is dependent upon adequate amounts of coarse woody debris (REO 1996). Draft management recommendations state that large decay classes, structural diversity and dense overstory (greater than 70% canopy closure) should be maintained to protect this species.

### 3) Special Status Species management

*Camassia howellii* (a Bureau Sensitive species) occurs on open, sparsely vegetated serpentine areas or openings in forests on non-serpentine soils. Populations are especially large on the slopes of Mt. Sexton and towards the head of Horse Creek. Although plentiful in the project area, its range is extremely small (its type locality is the Grants Pass area and it has not been identified yet in the Illinois Valley). Management could not only include preventing ground disturbance to populations, but also instituting a prescribed burning program to improve habitat.

*Lewisia cotyledon* var. *howellii* can occur on either serpentine or non-serpentine rock outcrops especially those adjacent to oak woodlands. Its range is the Klamath-Siskiyou region and is probably more threatened from recreationists than any land treatments. Management could include avoiding populations by diverting recreational activities.

*Limnanthes gracilis* var. *gracilis* occurs in ephemerally wet grasslands in the Rogue and Illinois Valleys. This species is a rare component of native valley habitats and could be considered an indicator species for the health of native wet grasslands. Protection from ground disturbance on native grasslands would protect populations and potential habitat.

The populations of *Silene hookeri* var. *bolanderi* (a Bureau Assessment species) still need to be botanically verified, since this species has not been seen in the area for some time. It occurs in serpentine grasslands in the vicinity of Mt. Sexton. It appears to be getting out competed by exotic annual grasses and was found in hazard fuel reduction areas. Management could include ensuring that

prescribed burning takes place in population areas.

Noxious weeds are of a concern in the project area for two reasons. First of all, noxious weeds were found concentrated not only in the usual disturbed areas such as landings and skid trails, but also along the power line running through Sections 20 and 29. This power line is acting as a conduit for both yellow star thistle and scotch broom, which can overgrow special status habitat. Secondly, the amount of exotic annual grasses in the project area is high, especially in all the serpentine grassland communities. These grasses were noted to be a problem at least for one special status species (as mentioned above). Management of exotic species could include eradication programs for smaller populations or prescribed burning of exotic annual grasses.

b. Environmental Consequences

1) Alternative 1: No Action

The effects of the No Action alternative on Survey and Manage or Special Status species would be both beneficial and adverse. The positive effects are that indirect impacts caused by ground disturbing activities to S&M species would be avoided. Canopy closures and the limited moist microsites would be maintained as well as mycorrhizal connections in areas where thinning would have taken place. This would allow for the continued ecosystem function and higher quality habitat required for the survival of the Survey and Manage species. Also, direct effects would be diminished on *Camassia howellii* populations. Since this species occurs in openings, it is more likely to be disturbed by machinery (*i.e.* landings) related to timber harvest.

The adverse effects of the No Action alternative on special status or Survey and Manage species would be the increased risk of wildfire. Areas with high fuel hazards and dense stands would not be cleared, increasing the risk of fire ignition in these areas. Without these hazard fuel reduction projects, the risk of high intensity fire increases and would threaten *Cypripedium* populations which have been shown not to survive such fires (Management Recommendations 1998). Threats would be increased for lichen species as well. Also, with no prescribed burning for habitat restoration, special status plant habitat would continue to be invaded by exotic annual grasses.

2) Environmental Consequences Common to All Action Alternatives

a) Recreation trail management

The actual trail bed for the Horse Creek Ridge trail was not marked during survey season and will be surveyed later. Any adverse effects on special status plants would probably be focused on rock outcrops along the route which would be mitigated by re-routing the trail. If the trail passes through an area slated for habitat treatment (*i.e.* prescribed burning to reduce exotic grasses), horse use could result in the introduction of more exotic grasses on newly rehabilitated areas.

b) Riparian Treatments

Riparian reserves are primary habitat for Survey and Manage non-vascular species. As with the vascular Survey and Manage species, these species require moister microsites. The substrate for lichens and bryophytes can be the trees (especially hardwoods) and shrubs within riparian areas or for

fungi, the moist soils. At this time, effects on specific populations cannot be determined since fungi surveys are not complete. It can be postulated, though, that habitat could be affected in the form of reduction of substrate for existing populations, reduction in habitat for the establishment of new populations and in the reduction of canopy needed to retain humid conditions (for such species as *Dendroica atricapilla intricatulum*). Connectivity of habitat is very important for such species. Retaining standing trees within these reserves could maintain this connectivity as well as suitable microclimate for Survey and Manage non-vascular species. These trees will also act as refugia and will provide the complex canopy structure required to protect species diversity, moist conditions and to act as dispersal centers for riparian-dependent species. Therefore, the effect of removal of larger pre-commercial sized trees in these riparian areas could reduce the ecological function of these reserves in relation to non-vascular species diversity and species dispersal. The removal of small pre-commercial sized trees and shrubs could allow for a more open condition in the understory of the riparian area, though, which as mentioned earlier could be beneficial to Survey and Manage lichens.

***Proposed Mitigating Measure #1:*** Restrict oak thinning to trees less than 4" DBH.

c) Special Forest Products and Young Stand Treatments/Forest Development

Survey and Manage lichens and bryophytes, as mentioned under Affected Environment, tend to grow on hardwoods under conifer canopy. Special Forest Product sales will have to be evaluated on a case by case basis to ensure that Survey and Manage species or their habitats are not affected. Such activities as firewood sales or any sales with hardwoods would be the focus. Any effects to vascular Survey and Manage or Special Status species would be mitigated through the PDFs.

d) Stand Harvest Treatments in the Older Seral Stages

The differences in level of effect on botanical resources is in direct proportion to the amount of habitat affected by treatment. It is not just a result of the number of acres treated but also the size of intact habitat treated and the size of remaining habitat left available for re-establishment. The Management Recommendations state that size and quality of habitat are important factors for the survival of *Cypripedium* species. Therefore, when assessing treatment alternatives for effects on botanical resources, the most important aspects to review are the number of acres within the oldest stands that will have ground disturbance taking place and the type of disturbance (*i.e.* commercial thinning versus structural retention). The variable of importance for the Granite Horse project is the type of disturbance taking place for each alternative, because structural retention will reduce canopy closure more than commercial thinning.

For all alternatives, while short term, direct effects may be mitigated by the procedures outlined in the PDFs, long term, indirect effects could include a reduction in population size and productivity of individual S&M populations within protection buffers. There is no definitive information available on whether buffers will protect species populations in the long run. Disruption in mycorrhizal connections could be detrimental over an extended period of time to the productivity of the population.

Indirect effects will occur from harvesting in potential habitat (*i.e.* late-successional forest habitat). These effects are compounded because of the naturally fragmented, sparse nature of potential habitat in the project area. Whether the treatment is commercial thinning or structural retention, the ground

disturbance from such activities could be detrimental to any Survey and Manage populations that may be dormant presently or to any establishment of new populations from intact habitat. This is because the treatments would disrupt the mycorrhizal connections necessary for survival of these species. Also, depending on the treatments, the canopy will be opened to varying points that could alter microsite from one of moisture and shade to more open, dry conditions.

(1) Alternative 2

The reduction in canopy closure in all harvest units from between 25 to 40% would reduce late successional habitat quality. Opening the canopy to less than 40% could reduce the extent of moist microsites and would disrupt mycorrhizal connections at a similar percentage in all mature stands (identified in Table B-2), especially those slated for structural retention. This could affect any potential habitat in these units for *Cypripedium fasciculatum* and would reduce the canopy needed to retain moisture for *Dendroica caerulea intricatulum* or *Buxbaumia viridis*.

(2) Alternative 3

This alternative would reduce the effects of canopy closure reductions for around 245 acres within the project area. Canopy closure would be retained in the dominant canopy layer leading to better moisture retention, hence the quality of late successional habitat would be higher for the Survey and Manage species that occur in the project area.

e) Fuel Hazard Reduction Treatments

As long as the management recommendations can be adhered to, these treatments should in the long run be beneficial to both vascular and non-vascular Survey and Manage species. Treatment areas will have to be reviewed on a case-by-case basis and such mitigation as removing fuel build-up from potential lichen/bryophytes habitat on tree trunks (in areas where Survey and Manage species have been found) could be instituted.

f) Wildlife Habitat Restoration and Enhancement

The specific units listed do include populations of the species, *Camassia howellii*. These populations will need to be monitored pre-burn, during burn and post-burn to study the effects of prescribed burning. Another area within the project which has potential for habitat restoration is on the southern slopes of Mt. Sexton in 34S-6W-Section 25.

g) Cumulative Effects

Most of the BLM Matrix land with merchantable timber in the Jumpoff Joe Watershed is or will be included in landscape projects with timber activities. This can also be said for BLM Matrix land in adjacent watersheds. In southwestern Oregon, no official habitat assessment has been done, but of the known *Cypripedium* population sites on BLM land, the majority are being affected by timber projects through canopy thinning, ground disturbance and habitat fragmentation. Of the known populations, the majority are being protected through buffers that have not been proven to ensure viability for a specific population.

The reasonable foreseeable future actions that will take place in the Matrix and on county and private land will include continued timber harvest, understory treatments and clearing of forest land for development. More Survey and Manage populations will continue to need buffering as more actions are planned on federal lands. Also, any populations on non-federal lands will most likely remain unprotected. The long term effect is a decrease in the ability of populations to maintain or to expand from these small islands of undisturbed ground into surrounding altered habitat and a decrease in the chances for persistence of these Survey and Manage species in southwestern Oregon.

#### Definitions/Management recommendation Citations

\* Mycorrhiza are underground fungi that provide a close physical association between the fungus and the roots of a plant, from which both the fungus and plant appear to benefit. A mycorrhizal root takes up nutrients more efficiently than one not associated with mycorrhiza. Mycorrhizal fungi (also known as ectomycorrhizae) are essential for host plant nutrient uptake and play important roles in nutrient cycling in many forests. Studies from the Pacific Northwest indicate that forest management activities can reduce populations of mycorrhizal fungi and forest regeneration success (Luoma, Eberhart, Amaranthus 1997).

Management recommendations have been based on the Record of Decision (ROD) Northwest Forest Plan, the Medford District Resource Management Plan, the BLM Manual 6840, Medford District botanist advisement and professional knowledge.

#### References cited:

Castellano, Michael A. and Thomas O'Dell. Management Recommendations for Survey and Manage Fungi. Government Publication. 1997.

Harris, Larry D. The Fragmented Forest, Island Biogeography Theory and the Preservation of Biotic Diversity. The University of Chicago Press, 1984.

Luoma, Daniel L., Joyce L. Eberhart, Michael P. Amaranthus. Biodiversity of Ectomycorrhizal Types from Southwest Oregon. Conservation and Management of Native Plants and Fungi. Native Plant Society of Oregon, Corvallis, Oregon. 1997.

Wells, T.C.E. The Biological Aspects of Rare Plant Conservation - Population Ecology of Terrestrial Orchids. Wiley and Sons Ltd. 1981.

Wogen, N.S. et.al. Management Recommendations for Vascular Plants. USDA/BLM. 1998.

## **6. Resource: Wildlife - special status/manage and survey species and their habitats**

### **a. Affected Environment - Introduction**

The project area is centered in the Louse and Jumpoff Joe Creek drainages of the Jumpoff Joe watershed and in the West Fork of Jones creek in the Grants Pass watershed. All of these streams are tributaries to the Rogue River. The majority of the land managed by the BLM in these watersheds is dominated by forest, with small inclusions of non-forested areas. Past land management activities within this watersheds include mining, fire suppression, road construction, and timber harvest.

As of this date, surveys in the project area have not been completed for all special status species including S&M. Potential habitat does exist throughout the project area. In the present discussion of environmental consequences, impacts to these species will be based on alteration of potential habitat. The actual effects will be equal to or less than what is being analyzed.

The lands within the project area provide habitat for a number of sensitive species including 5 pairs of Northern Spotted owl\* (*Strix occidentalis caurina*), Red tree vole\* (*Phenacomys longicaudus*), the Great Gray owl (*Strix nebulosa*), Goshawks (*Accipiter gentilis*), and other raptor as well as all five species of buffer bats (\* these species have been detected). Habitats within the project area include oak woodlands, riparian, meadows, late-successional forest, snags, abandoned mines, seeps, springs, down wood, and brushfields.

This effects discussion addresses first the potential to various habitats and then to some individual species

**b. Habitats -**

**1. Affected environment project level scale - Habitats**

The project area lies predominantly in Jumpoff Joe, Louse creek and West Fork Jones creek drainages. Elevation range from 3,833 feet on Sexton summit to 1,200 feet along the banks of the Jumpoff Joe creek. The proposed project area incorporates approximately 6,222 acres in which a series of actions are proposed including approximately 1300 acres of early seral stand treatment, 937 acres of fuel reduction, 540 acres of wildlife habitat improvement project, as well as 2,997 acres of timber harvest. Most of the stands identified for timber harvest are dominated by Douglas-fir and ponderosa pine plant associations. Many of the stands will be entered for the first time under the action alternatives.

In this analysis and discussion, late-successional forest habitat is characterized by stands having McKelvey 1 and 2 habitat ratings and vegetation condition class 7 and 8. In general these stands support multiple canopy layers, a high canopy closure, large live green trees and large snags/down logs. Stands with old-growth characteristics also have a multilayered, multispecies canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood; numerous large snags; and heavy accumulations of wood, including large logs on the ground. This habitat characterization is more restrictive than those vegetative conditions used for characterizing late-successional forest in general.

Approximately 1,388 acres of late-successional forest habitat is being proposed for commercial harvest. These stands provide potential habitat for a variety of old growth/mature forest associated wildlife species such as the northern spotted owl, northern goshawk, red tree vole, brown creeper and hermit warbler. This habitat is located sporadically across the project area due to past timber harvests, wildfires and soil types that do not support late-successional habitat. As a result, this habitat, and the connectivity corridor/refugia it provides, is extremely important for late-successional dependent species. The late-successional habitat in the Grants Pass watershed is of particular concern due to the low amount of this habitat remaining in the watershed (approximately 11%). Private and county lands in this watershed do not currently provide late-successional habitat in the Grants Pass watershed.

Nonforested habitats such as serpentine grasslands, meadows, chaparral brushfields, oak woodlands and Jeffrey Pine savannahs are prevalent in the project area. These habitats are partially dependent on fire for maintenance and restoration. The majority of these lands have not burned for more than 50 years and are currently at the edge of their natural range of condition. Under natural conditions the fire return interval into these habitat types range from 10-25 years.

The condition of the riparian areas vary greatly in the watershed due to the level of past management including fire suppression, logging and road building. In general fire suppression has lead to an increase in down wood and vegetation densities. Past timber harvest in riparian areas has led to areas dominated by early seral vegetation and/or younger forest with more simplified forest structure (even age) then undisturbed sites.



2. Environmental consequences of Vegetation Treatments and Harvesting to Habitats
  - a) Alternative 1: No Action - Habitats

The no action alternative would be both beneficial and potentially detrimental to wildlife species. Late-successional forest habitat levels would continue at their current rate providing habitat and dispersal opportunities for a host of late-successional dependent species. Snag and down wood cycling would continue unabated. Species utilizing this habitat such as the Pileated woodpecker would benefit from the increased level of coarse wood. The forest maturation process would continue at the current rate. Development of larger trees and canopy layers would continue at their current rate. Stand development patterns would continue to differ from the pre-fire suppression period (natural disturbance regimes). Fire would continue to be excluded from the ecosystem to the greatest extent possible. Forest fuels would continue to accumulate. Existing fire conditions in understory and surrounding vegetation will continue to put the existing old growth and mature habitat at risk for a stand replacing fire. The actual affects of a potential fire are impossible to gauge. Late-successional habitat can benefit as well as be devastated by a fire depending on the severity. A moderate ground fire may benefit late-successional forest by creating gaps in the canopy, encouraging shade intolerant tree species and increasing the forest complexity. Tree species that are high fire tolerant and shade intolerant such as California black oak, Pacific madrone, Oregon white oak and pine would continue to be lost from the stand. Stand structure complexity would continue to be simplified by the loss of tree species providing horizontal structure such as Pacific madrone and California black oak until such time that new gaps in the conifer overstory are opened through suppression and mortality. Species utilizing these tree species for mast and berry crops as well as cavities and nesting structure would lose a food source as well as habitat.

Early seral forested stands would continue to develop on their current successional trajectory. Species utilizing early forest conditions such as the Spotted towhee (*Pipilo erythrophthalmus*) would slowly lose habitat as the stand develops. Species utilizing early seral forest conditions such as deer would slowly lose their current level of browse through succession.

Trends in pine, oak, Jeffrey pine savannahs and serpentine meadows would continue with a decline of their extent and vitality due to the invasion and encroachment by fire intolerant species. Current trends in habitat change of these plant associations adversely affect wildlife species like the flammulated owl, western blue bird and violet green swallow. These birds species prefer the white oak and ponderosa pine plant associations for nesting and foraging and have been experiencing population declines in the past 10 years (Andelmand and Stock 1994). Areas dominated by chaparral community plants such as wedgeleaf ceanothus would continue to become decadent. Species depending on this plant for winter forage such as the black-tailed deer (*Odocoileus hemionus*) would continue to lose this important browse plant. Other species which dependent on chaparral for nesting structure such as the Wrentit (*Chamaea fasciata*) would continue to lose potential nesting structure.

Riparian areas and associated upland vegetation would continue to develop at their current rate. Areas dominated by early seral vegetation would continue to hinder the dispersal of species associated with older forest but provide habitat for species associated with early seral vegetation. Areas with mature/old growth forest would provide for quality dispersal habitat for species associated with older forest.

b) Alternative 2 and 3: Action Alternatives - Habitats

1) Similar affects to Habitats

Alternatives 2 and 3 will reduce the amount of late-successional forest habitat (indicated by McKelvey 1 and 2 and/or mature/old-growth class) on the BLM portion of the Jumpoff Joe watershed from 4,128 acres to 3,103 acres (25% reduction) and 1,394 acres to 1,096 acres (21% reduction) in the Grants Pass watershed. Within the Jumpoff Joe watershed late-successional forest habitat will be scattered and fragmented with the largest remaining blocks being located in the Louse creek drainage. The loss of 25% of the late-successional habitat within the Jumpoff Joe watershed would negatively affect late-successional species through habitat loss and fragmentation. Species with large home range requirements such as the spotted owl, would most likely be lost in the project area (see Table 3-4 for affects of known owl sites). Species with smaller home range requirements such as the Red tree vole may be able to persist in the project area, but may be isolated from other such populations until such time when habitat conditions recover (20+ years).

Within the Grants Pass watershed there is 1,394 acres of late-successional forest habitat. The proposed action would alter the largest piece of late-successional habitat remaining (298 acres) in the watershed. This area is located in a low divide that allows for dispersal between the Jumpoff Joe watershed and the Grants Pass watershed. The stand is composed of a mixture of older/larger Ponderosa pine and younger/smaller douglas fir. It appears that the site historically was dominated by Ponderosa pine with Douglas-fir occupying more of the stand due to fire suppression. The action would reduce the canopy closure from 70% to approximately 40%. Post harvest, the northern part of the Grants Pass watershed would be devoid of any sizeable ( $\geq 100$  acres) pieces of late-successional habitat outside the 100 acre Fielder Creek spotted owl core area located 2 miles to the west. Species that require cool moist forest conditions found in late-successional habitat would most likely be lost from the older stands being managed. Movement of late-successional dependent species between the Grants Pass and Jumpoff Joe watersheds would be hindered for 20+ years until such time that the stands recover to pre-harvest conditions. Post action there would be 2 stands of late-successional habitat greater then 100 acres in size in the watershed and on matrix land. A total of 665 acres of matrix designated land would remain in late-successional habitat condition along with 5 Spotted owl cores (550 acres ). It should be noted that not all of the owl cores are late-successional habitat. Stands of late-successional habitat larger then 100 acre in size would be concentrated in the southern portion of the watershed. The majority of the remaining late-successional stands would be less then 50 acres in size and would be widely scattered. Many of the stands would be too small to support species with large home range and may not represent interior forest conditions due to their small size and/or shape. The loss of large stands of late-successional habitat may lead to isolated populations of animals which are at risk for losing their genetic vigor.

Species that depend on late-successional forest habitat are often poor dispersers and more vulnerable to extinction in fragmented landscapes than species associated with early successional stages (Noss 1992). This is particularly true for flightless species such as the Fisher (*Martes pennanti*). Fishers are reluctant to travel through areas lacking overhead cover (Maser et al. 1981) and are at risk for genetic isolation. Species that are more mobile, such as the spotted owl, may be capable of dispersing into isolated patches of habitat but run a higher risk of predation when crossing areas of unsuitable habitat.

Small patches of old-growth forest can provide important refugia for poor dispersers and species with small home ranges such as the Del Norte salamander (*Plethodon elongatus*), allowing for recolonization into surrounding areas if future conditions become more suitable. Isolated patches of old-growth also offer important refugia for a number of late-successional associated bryophytes, fungus, and other plants.

Two prescriptions types are being utilized under the action alternatives' commercial thins with modified group selections and structural retention harvests. Stands which receive a commercial thin with a modified group select retain some of the structural components of older forest including a recruitment source for snags/down wood, large trees and multi story canopies but lack the high canopy closure associated with late-successional habitat. It is anticipated that post harvest these units will retain approximately 40% canopy closure. These areas will allow for a greater competition between generalist wildlife species and old forest obligates. Micro-climatic conditions and micro-sites that some species need may not be met in stands with canopy closure less than 40%. For example Prophyoan slugs (survey and manage species) appear to require cool moist forest floors and may be absent from warmer drier conditions that are anticipated post harvest. In general, these areas will no longer provide late-successional habitat. In addition the more open conditions may led to increase in predation as more generalist species such as the Great horned owl (*Bubo virginianus*) move in and compete with interior forest species.

Tree species that are high fire tolerant and low shade tolerant will be retained in the stand. This includes species such as California black oaks and Pacific madrone that provide the majority of the horizontal structure in the late-successional forest in the project area. These trees improve the overall quality of the forest by producing mast and berries, as well as provide nesting and resting structure for wildlife. They are also host plants for a number of mycorrhizal species that produce fruiting bodies that species such as the Northern flying squirrel (*Glaucomys sabrinus*) uses as a primary food source. In addition, a number of mollusc are known to utilize hardwoods litter as food. Retaining these components in the forest maintains a structure more similar to natural conditions.

Stands receiving a structural retention prescription will have an anticipated post harvest canopy closure of 25%. A minimum of 16-25 trees per acre will remain in both an aggregate and dispersed pattern. These stands will provide early seral conditions with scattered remnant large tree component from the original stand.

**Big Game Habitat:** Section T34S R5W Sections 19 and 20 have exceptional winter range for Deer and Elk. This area is a mixture of optimal thermal cover (mature stands with 70% canopy closure) and opened meadows. Many of the meadows are being encroached by trees and brush species due to the lack of fire. The action alternatives would reverse the many decades of fire suppression and begin to return the meadows to a more historic condition. Forage habitat for deer and elk would be greatly improved. Both action alternatives would restrict the amount of thermal cover in this area. Post action at least 20% of the area would remain in optimal thermal cover. Nevertheless the loss of thermal cover in the area will persist for several years until such time that stands recover. A local reduction in deer and elk populations may occur if winter conditions become severe.

**Snag Habitat:** Snag levels within the project area vary due the amount of past management. Stands that have never been managed for timber are generally rich in snags and exceed the minimum level considered to be optimal for 100% retention (3.1 per acre) but have the potential to have levels

impacted by timber harvest. Other units that have been entered in the past for timber harvest are currently snag deficit. In these units, species associated with snags and down logs have been negatively impacted. Project design features will retain snags where feasible but loss of snags to facilitate harvest and provide for safe logging conditions will contribute to the loss of additional snags. In spite of the project design feature to retain an additional 3 poorly formed and/or defective green trees per acre in areas of low existing snag density there is potential for a loss of the current snag level and associated wildlife.

***Proposed Mitigating Measure #2:*** In areas of low snag levels buffer out snag clusters (>6 snags) by 1 tree length to ensure the project area retains a high level of snags.

***Proposed Mitigating Measure #3:*** Defer from thinning and harvesting the 292 acres of late-successional forest habitat in units 35S-5W-33-004, 010 and 35S-5W-34-004 and 005 to maintain their late-successional habitat conditions until such time that adjacent stands provide similar ecological conditions. Adjacent stands harvested under the recent Bloody Jones land management project should begin to provide similar conditions between 5-10 years.

!        Effects of proposed mitigating Measure #3: Wildlife

The 292 acres of late-successional habitat will function as refugia for a number of species associated with older forest (e.g. red tree vole, northern goshawk, hermit warbler). These stands are large enough to maintain interior late-successional habitat conditions, where species can avoid predators associated with edge. Down wood cycles would continue unabated, benefitting snag and coarse wood levels and associated wildlife. These stands could provide a source populations for adjacent treated stands as ecological conditions recover to late-successional habitat. The area is located in a low divide between the Jumpoff Joe and Grants Pass watershed and provides connectivity between the two drainages. Maintenance of this habitat would provide future opportunities for low-mobility species and species with small home ranges to disseminate in between the two watersheds. Deer and elk would benefit from the maintenance of thermal and hiding cover.

!        Effects of proposed mitigating measure #3: Botany

This proposed mitigation would be beneficial by maintaining a large tract of undisturbed late-successional habitat. Two survey and manage populations within this proposed deferral area would benefit by increasing their potential viability. A large tract of undisturbed habitat surrounding these populations could increase chances for growth in the size of these populations and increase the potential for new populations dispersal, especially between the two watersheds.

If precommercial thinning, of small diameter stems (<4" DBH), in the densest stands patches does not take place though, reduction in potential habitat for Survey and Manage lichens and bryophytes could occur.

!        Effects of proposed Mitigating measure #3: Vegetation / Silviculture

All units selected for potential deferral as a part of this proposed mitigating measure contain elements of both the Douglas-fir and Pine series. Overall stand growth on these proposed deferral units will continue to slow at its current rate. Loss of pine species in all size classes and large

conifers due to competition will continue. Not thinning / harvesting here at this time will mean that another area will be harvested during the deferral period to fulfill annual harvest commitments. The proposed deferral units would still be high priority candidates for commercial thins or group selection treatments.

**Proposed Mitigating Measure #3a:** With a deferral as proposed in measure #3, the pine species and large diameter conifers are at greatest risk of decline due to competition. Because of this, an alternative to full proposed mitigating measure #3 deferral is proposed here. A group selection thinning on approximately 20% of the area would be done to favor the regeneration of pine and maintain a viable representation of the pine series. On those portions of the units which are pine sites, most of the competing second growth would be removed, creating site conditions suitable to produce large ponderosa pine and to maintain the current large legacy ponderosa pine. Group selection areas would be large enough to promote and establish pine regeneration. A follow up thinning harvest would occur on the Douglas-fir series sites when watershed late-successional habitat levels reach 15% of the Rogue - Grants Pass watershed. The actions proposed in this alternative mitigating measure emphasize a high value for habitat and retains future economic viability for harvesting in the project area.

#### ! Effects of proposed mitigating measure #3a: Wildlife

The effects of proposed mitigation # 3a will be both similar and different from those described above. The measure would adjust the prescription proposed under the two action alternatives to a series of group selections focused around pine pockets. The prescription calls for harvesting approximately 20 % or 60 acres of the stands in 1 to 3 acre units. Within the harvest areas, pines with crowns greater than 25% will be retained with an approximate 15% canopy closure. The remainder of the stand will continue in the current stand trajectory. Pockets of late-successional habitat will be present in the remainder unharvested portion of the stands. Habitat for species with small home ranges such as the Blue-grey tailed dropper (*Prophyaon coeruleum*) would be maintained. The area will continue to function as refugia and source population for adjacent stands. Species requiring interior forest conditions or species with large home ranges may be jeopardized depending on the size and location of the harvest units. Increased edge habitat would be present throughout the stand, exposing interior forest animals to increased predators such as the Great horned owl (*Bubo virginianus*). Connectivity would be maintained but at a lower level than described under mitigating measure #3.

#### 2) Comparative Differences of Alternative 2 and 3 - Habitats

The greatest difference between the action alternatives will be in level of post harvest structural complexity, the ability of the stand to provide functions such as snag recruitment and recovery time in the identified 543 acres. Alternative 3 will retain a greater level of canopy closure, potential snag/down woody recruitment, and a higher level of horizontal and vertical structure. The stands will not be in a state to openly grow. Suppression and mortality of individual trees will continue providing a source of snags and down wood. Stand recovery rate into late-successional habitat will occur approximately 10 years sooner. These stands will maintain a greater level of connectivity and allow for a higher level of dispersal for species associated with older forest conditions than

alternative 2. Species utilizing late-successional habitat will have a higher potential to persist in the drainage than under alternative 2.

### 3. Environmental Consequence of Road Work to Habitats

#### a) Alternative 1: No Action

Under alternative 1 no new roads or helicopter landing sites would be constructed. Vegetation trajectories and disturbance levels to wildlife would remain constant.

#### b) Alternatives 2 and 3: Action Alternatives

Under the action alternatives all new road and helicopter landings would be decommissioned post project. There would be a short term increase in disturbance to wildlife species due to the increase in traffic in the immediate vicinity of the project area. Vehicle disturbance increases stress to wildlife which may lead to reduced reproduction. Off road vehicle use in the area is currently high. To ensure that the new road/helicopter landings construction does not lead to long term increase in vehicle disturbance to wildlife the following mitigating measure is recommended.

***Proposed Mitigating Measure #4:*** Effectively tank trap decommissioned roads to prohibit off road vehicle use in the road bed and helicopter landings.

The decommissioning of 0.5 miles of road along Horse Creek will benefit a variety of wildlife species. The location of the road is within a riparian corridor heavily used by deer, elk, bobcat and cougar. The closing of the road will prevent vehicles from driving across Horse Creek, and driving within the riparian reserve. Vehicle disturbance to the area will cease. The area will revegetate providing secure habitat for a myriad of species.

### 4. Environmental Consequences of Fuel Treatments to Habitats

#### a) Alternative 1: No Action

Under Alternative 1, the current vegetation trajectory would continue. Stand densities would continue to increase to a point where stagnation and mortality would begin to select out individual trees. Species associated with snags and down wood, such as the woodpeckers would benefit from the increase in habitat. The risk of stand replacing fire would continue to be high and the probability of a stand replacing fire would continue to increase. A loss of late-successional forest habitat through a stand replacing fire could lead to the localized extirpation of species associated with this habitat in the action area.

#### b) Alternative 2 and 3

The reduction in fuel loading, tree density and ladder fuels will reduce the probability for a large stand replacing fire in the project area. Snags and down wood habitat would be diminished. Species associated with down wood such as the Ensatina salamander (*Ensatina eschscholtzii*) would lose habitat. The reduction of hazard would lessen the possibility of a stand replacing fire in the proposed action area. The potential loss of some late-successional forest habitat would be lessened.

Habitats such as oak woodlands, serpentine meadows and Jeffrey pine savannahs would be restored towards pre-fire suppression state and would be more within their natural range of conditions. There would be a loss of habitat for some species such as Spotted towhee (*Pipilo erythrophthalmus*) which utilize brushfields, but this would be naturally mitigated by the mosaic fashion of the burn. It is anticipated that portions of the units would receive little or no fire, while other areas are burned more intensely. Quality winter range for species such as elk (*Cervus elaphus*) would begin to be restored improving browse conditions for this species. In general the mosaic vegetative nature of the project area and the unique habitat they represent will be restored and preserved, benefitting species associated with these habitats.

c. Environmental Consequences to **Species**

1) Northern Spotted Owls

a) Affected Environment

There is approximately 3,823 acres of suitable spotted owl habitat on federal land in the Jumpoff Joe watershed and 1,353 in the Grants Pass watershed. There is no identified Critical Habitat within the proposed action area. Currently there are 7 northern spotted owl locations in the Jumpoff Joe watershed and 6 in the Grants Pass watershed.

b) Environmental Consequences

(1) Alternative 1: No Action

The 4 spotted owl sites within 1.3 miles of the proposed project would remain at their current habitat level (see Table 3-4), which is below the viability threshold of 1,388 acres (USFWS standard). It is unknown if these sites will continue to nest and produce young in the long run due to the insufficient level of habitat. The forest maturation process would continue which would be beneficial to the Spotted owl. The potential for a fire in the project area would remain high.

(2) Alternative 2 and 3: Action Alternatives

The action alternatives would alter 793 acres of suitable spotted owl habitat (nesting, roosting and foraging) to dispersal habitat and 104 acres from suitable to nonhabitat. The action will “take” four spotted owl sites by further reducing the amount of suitable below the level of 1,388 acres within their home. It is likely that the 4 owl sites will be displaced as a result of insufficient suitable habitat and the sites eliminated from further production. Post action it is estimated that there would be 3,224 and 1,055 acres of spotted owl habitat in the Jumpoff Joe and Grants Pass watershed respectively.

The action alternatives would lead to the reduction of forest canopies below 60% threshold which is considered to be a minimal for quality spotted owl habitat. Spotted owls would lose breeding (nesting), roosting and foraging habitat. Interior forest conditions would be lost exposing spotted owls to higher amounts of predation. The ability of the species such as the Spotted owls to persist in the project area and re-populate habitat within the next 20 years or (until the canopy closes) would be hindered.

The majority of spotted owl habitat remaining in the habitat in the Jumpoff Joe watershed would be concentrated in the Louse Creek drainage. There would be several patches of habitat greater than 100 acres in size remaining in the watershed. Dispersal across the watershed will remain sufficient for spotted owls. The majority of the harvest under the action alternatives will maintain dispersal habitat for spotted owls.

The 1,055 acres of suitable spotted owl habitat remaining in the Grants Pass watershed would be concentrated in the Savage and Greens creek drainage in the southern portion of the watershed. The action alternatives would alter the largest remaining patch of suitable spotted owl habitat in the watershed (298 acres) from suitable to dispersal habitat. This area is located in a low divide that allows for dispersal between the Jumpoff Joe watershed and the Grants Pass watershed. Post harvest, the northern part of the Grants Pass watershed would be devoid of any sizeable pieces of suitable habitat outside the 100 acre Fielder Creek spotted owl core area. Dispersal habitat for spotted owls would be similar to preharvest level in that the majority of the stand proposed for harvest will retain a 40% canopy closure. Recent projects in the watershed (Birdseye Rogue, Savage Green and Bloody Jones) have resulted in maintaining the majority of the stands in dispersal condition. The reduction in suitable habitat in the watershed would limit the likelihood of maintaining the current number of spotted owl sites.

Precommercial thinning and commercial thinning stands that currently are not late-successional forest habitat may accelerate the development of this habitat or place these stands on a trajectory they may lead to a more structurally complex forest. Approximately 465 acres of precommercial thinning / brushing / fertilizing is proposed under the action alternatives.

The USFWS uses thresholds for the amount of suitable habitat around spotted owl sites as an indication of a sites' viability. Thresholds to determine incidental take have been defined as 40% of the area within 1.3 miles of the center of activity or about 1,388 acres. Incidental take, in this case, habitat modification will occur at 4 Northern spotted owl sites. Table 3-4 displays the effect the proposed actions would have on spotted owl sites. This project has undergone formal consultation with the USFWS and the Service has issued a Biological Opinion (#1-7-98F-392) which resulted in take permits for these northern spotted owls sites.

### 3) Red Tree Vole

#### (a) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions which would be beneficial to the Red tree vole (RTV) and other species associated with late-successional forest habitats. The potential for a fire in the project area would remain high which could prove highly detrimental to the RTV habitat.

#### (b) Alternative 2: Action Alternatives

The Red tree vole is an arboreal species of rodent with very low dispersal capabilities. The broad management objective for this species is to retain sufficient habitat to maintain its potential for reproduction, dispersal and genetic exchange. Surveys for the Red tree vole have located the species throughout the project area.



Current management recommendations provide various options to maintain populations (*i.e.*, 2 or more active nest not more than 100 meters apart). Prior to implementation, the appropriate level of protection for each site will be determined. There would be no affects anticipated to sites that are buffered from ground disturbing activities. There will be a negative effect to sites that are not buffered from the timber sale part of the project, due to the decrease in canopy closure and the increase in potential predation in the project area. On a regional scale it is not anticipated that the proposed action will decrease the viability of the population as a whole due to the application of the management recommendations.

The proposed precommercial thinning and brushing throughout the project area, may hasten the development of potential red tree vole habitat in the future which would positively contribute to the maintenance of the species in the project area and watershed.

4) Northern Goshawks

(a) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions which would be beneficial to the Northern Goshawk and other species associated with late-successional forest habitats. Potential local populations would likely be maintained in the project area. The potential for a major fire in the project area would remain high which, if it occurs, would adversely effect the goshawk.

(b) Alternative 2: Action Alternatives

Potential habitat for Northern Goshawks (*Accipiter gentilis*) is located throughout the proposed treatment area. This species is a bureau assessment species. Surveys are not currently required but some opportunistic surveys have been conducted though not to protocol standards. None have been found to date. The proposed commercial thinning and regeneration harvest would modify the affected habitat from a nesting to non-nesting condition/quality. It is estimated that 897 acres of nesting habitat would be modified to a non-nesting condition. This may lead to a reduction in the local population of goshawks.

The proposed precommercial thinning and brushing would hasten the development of potential Goshawk habitat in the future which could contribute to the maintenance of the species in the project area and watershed.

5) Del Norte Salamanders

(a) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions which would be beneficial to the Del Norte salamanders.

(b) Alternative 2 and 3: Action Alternatives

Habitat for the Del Norte salamanders (*Plethodon elongatus*) is located throughout the project area.

Surveys will be conducted prior to any ground disturbing activities. This species of salamander is intricately tied to areas with rock and talus. This type of micro-habitat occurs primarily near rock outcrops, ridge tops, and along riparian areas. Habitat occupied by Del Norte salamanders will be buffered with a 100' or 1 site potential tree "no ground disturbing" buffer. Due to this mitigating measure there are no anticipated affects to the Del Norte salamander.

6) Great Gray Owl

(a) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions which would benefit Great Gray Owls by increasing the amount of nesting habitat. Foraging areas would continue to be encroached upon by fire intolerant plant species reducing potential foraging opportunities. The potential for a fire in the project area would remain high which, if it occurs, could adversely impact the GGO.

(b) Alternative 2 and 3: Action Alternatives

Great gray owl (*Strix nebulosa*) habitat is located throughout the project area. Locally, Great grey owls have been located nesting in a variety of stand types, but a closed canopy (>60%) and room for flight is a common factor. Foraging occurs in open stands, old clearcuts, natural meadows, and agricultural land.

Current protocol for this species does not require surveys below 3,000 feet in elevation. Sporadic surveys for this species have been on going in the best locations in the project area but not to protocol standards below 3,000. These surveys did not locate any GGOs. Surveys will be conducted to current protocol standards in areas with potential habitat greater then 3,000 feet in elevation. If sites are located, approved mitigating measures will be implemented. It is anticipated that this sale will modify 500 acres of existing habitat in the project area from nesting to non-nesting condition which could result in a local reduction in the great gray owl population. Foraging habitat would be improved by removing encroaching woody vegetation from meadows.

6) Song Birds

(a) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions which would maintain the current bird community composition. Overtime, there would be an increase in numbers of species associated with snags and down logs as well as deep bark and forest gleaners and a decrease in birds associated with early seral vegetation and more open stand conditions.

(b) Alternative 2 and 3: Action Alternatives

In 1994 a study was undertaken in the Panther Gap Timber sale (near Williams, Oregon) to measure the effects that commercial thinning has on the composition of the song bird community. The stands examined in the study are similar to the stands identified for commercial thins. Stands were measured for abundance and species richness (number of species), pre and post harvest. Due to the

similarity of the study and the project area stands, it can be assumed that the effects of the two proposed action alternatives will be similar to those observed at Panther Gap Timber sale. Janes (1997) found that winter bird abundance on both south and north facing slopes were near 50% lower after thinning harvest. Forest gleaners, the dominant group of winter birds, showed the largest declines. Species such as Chestnut-backed chickadees (*Parus rufescens*) and Red-breasted Nuthatches (*Sitta canadensis*) were among this group. It is hypothesized that these species declined due to decrease volume of foliage and bark areas and a decrease in the number of available cavities for roosting and nesting. There was a modest increase in terrestrial insectivorous birds in particular Winter wrens (*Troglodytes troglodytes*) which apparently benefitted from the increase level of down wood.

Spring breeding bird populations showed similar results to those of the wintering birds. Species utilizing bark and foliage for foraging showed the greatest decline, while species utilizing down wood and open stand conditions increased. Species showing declines include Hermit Warblers (*Dendroica occidentalis*) and Nashville Warblers (*Vermivora ruficapilla*) as well as several other species. Species showing an increase include Mountain Quail (*Oreortyx pictus*), Hairy woodpeckers (*Picoides pubescens*) and House wrens (*Troglodytes aedon*). Overall it appeared that thinning by the timber harvest changed structural characteristics in the stands that resulted in decreased habitat for some species and increased habitat for others.

It is anticipated that structural retention harvest will lead to a greater degree of shift of song bird population away from species requiring high canopy closure and greater structural conditions such as Brown Creepers (*Certhia americana*) to species requiring early seral coniferous habitat as well as more open stand conditions such as Dusky Flycatchers (*Empidonax oberholseri*). As the commercial thinning stands begin to respond to the treatment it is anticipated that the bird population will again shift to favor species utilizing dense forest stands. Within 20 years the bird community will be similar to the pretreatment bird species composition.

## 7) Molluscs

### (a) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions which would be beneficial to molluscs. There would be an increase in habitat conditions for species requiring late-seral conditions. Foraging opportunities for species associated with shade intolerant hardwoods would diminish. The potential for a fire in the project area would remain high which if were to occur would adversely impact mollusc habitat.

### (b) Alternative 2 and 3: Action Alternatives

All lands identified for commercial timber harvest will be surveyed for Survey and Manage molluscs. If located the approved management recommendations will be implemented. This group generally requires cool moist environments with the exception of *Helminthoglypta hertleini* which may utilize rocky talus in open exposed slopes. It is anticipated that S&M species of mollusc will be detected in the project area and buffers and/or other means of protection will be implemented.

## 8) Townsend's Big-eared bats

Surveys had located Townsend's big-eared bats (*Corynorhinus townsendii*), a bureau sensitive species, in an abandoned mine in a proposed harvest unit. Project design features for this project establishes a 250' no harvest buffer around mines that are occupied by any species of bat. For Townsend's big-eared bats, the interim management recommendations require a 1,000-foot limited action buffer to protect the adit and shaft openings from edge effects. The site is being used as a hibernacula (winter roost), but it is unknown as of this date (1/3/00) if the site is being used as a maternity colony. Surveys will be conducted in the fall of 2000 to determine if the site is utilized during the summer.

**Proposed Mitigating Measure #5:** Implement the interim management recommendation of a 1,000 foot buffer around the mine adit (Interim Management Guidelines for 1995 for the protection of *Corynorhinus townsendii*, submitted to the REO May 1995).

9) Marbled Murrelets.

The entire project area is out of the known range for Marbled Murrelets and there are no anticipated affects to the species.

d. Cumulative Effects

The two 5th watersheds in the proposed project area have been greatly altered by past management activities on State, county, private and federal lands. Currently, the BLM is in the process of planning both the Granite Horse and the Birdseye Jones project in the Rogue - Grants Pass watershed. This watershed has seen a great deal of land management activity in recent years. In 1997, two timber sales were harvested in the Grants Pass watershed. The Savage Green project in the southern part of the watershed and the Bloody Jones project in the northern part of the watershed. Prior to harvesting these two projects the watershed had 2,807 acres of late-successional forest habitat. With the harvest of those two projects, and the foreseeable harvest of the Granite Horse project there will have been a 40% reduction in the amount of late-successional habitat in the watershed. Approximately 11% of BLM managed land which is capable of producing late-successional forest habitat land will remain in this condition. The foreseeable future actions are for further reduction of late-successional habitat with the timber harvest associated with the Birdseye Jones project. Species of late-successional dependent wildlife occurring on private and or county land will most likely remain unprotected. The BLM manages the majority of the remaining late-successional forest habitat in the watershed. It is anticipated that post actions on all the BLM projects in the watershed that approximately 9% of late-successional habitat will remain on BLM lands in the watershed. The remaining late-successional will be widely scattered throughout the remaining portions of watershed.

The Jumpoff Joe watershed will have a 25% reduction of late-successional habitat (4,128 to 3,103 acres) The remaining habitat will be scattered and fragmented with the largest remaining blocks being located in the Louse Creek drainage. The reasonable foreseeable future action will be further landscape projects including timber sales within the watershed. The Joe/Louse deferred watershed may become available for timber harvest after year 2003. This area contains the largest remaining blocks of late-successional habitat in the watershed and allows for a north / south dispersal route from the Grants Pass watershed through Grave Creek watershed.

The result of these actions will be a reduction in the refugia capabilities of these stands, as well as a reduction in the ability of these stands to temporally and spatially function as late-successional habitat. This means that some species associated with this habitat will be negatively affected. The potential for the maintenance and development of late-successional forest habitat within these drainages is greatest on BLM lands.

Table 3-4: Affects of the proposed project on the known spotted owl sites in the project area.

SITE NAME	MSNO	Suitable habitat within 1.3 miles (Acres)	Percent suitable within 1.3 miles	Suitable habitat within 1.3 miles - post project (acres)	Percent suitable within 1.3 miles
Cove Creek	2230	656	19%	557	16%
Granite Key	3291	1,070	31%	934	27%
Mccoy	4042	1,010	29%	939	27%
Dog Tunnel East	0912	384	11%	344	10%

## 7. Resource: Special Forest Products

### a. Affected Environment

Historically and currently, there is a high demand for fuelwood and small timber sales in the project area due to the close proximity of Grants Pass. In the last five years there has also been an increase in the demand for poles and manzanita. Other Special Forest Products, such as burls, mushrooms, boughs, and medicinal plants have been harvested in small quantities.

In the last five years, quantities of fuelwood available to the public from BLM lands has decreased dramatically. Fuelwood opportunities are traditionally connected to timber sales and are limited to slash left over from logging activities. With the decrease in the number of timber sales and the change from clearcutting to commercial thinning, very little slash from timber sales becomes available for public fuelwood areas. In the project area, there are no areas currently available for fuelwood or pole cutting. Small amounts of timber have been sold from hazard trees and blowdown. Fuelwood theft is fairly common.

### b. Environmental Consequences

#### 1. No Action

Opportunities for fuelwood, poles, and small timber sales in the project area would be extremely limited or non-existent. Demand for products would greatly exceed supply. Fuelwood theft would continue to be a common occurrence. No substantive effects for other Special Forest Products have been identified.

#### 2. Alternatives 2 and 3

Affects would be the same for Alternatives 2 and 3.

The greatest potential for pole cutting and small timber sales units are in 35S -5W-9 - 005 and 007; and 35S-5W- 19-007. These units are the most accessible and economically feasible for small operations. Based on the assumption that treatments in these units would be accomplished through the Special Forest Products Program, approximately 22 acres would be available for small timber and pole sales geared toward independent, local loggers and small milling operations. About 36 MBF would result from the thinnings. The sales would occur over a 5-year period.

The greatest potential for public and commercial fuelwood cutting would be in the following units / areas:

- 1) 35S-5W-19-006. Thinning of madrone would yield high quality fuelwood (approx 25 cords).
- 2) Cutting along roads in units targeted for fuel hazard reduction. Roads 35-5-20.2 and 35-5-20.1 have the greatest potential for Special Forest Products removal. Opening these areas for fuelwood cutting prior to service contract work would make approximately 20 cords of fuelwood available to the public.
- 3) Logging slash from the timber sale units and at landings would be available for fuelwood cutting when the timber sale contract terminated.

In addition, there may be opportunities for salvaging wood after brushing, pre-commercial thinning, and other fuel hazard reduction treatments for fuelwood cutting. It is preferable to enter units prior to service contract work since the quality of the special forest products is usually destroyed or made inaccessible during contract treatments.

There would be a beneficial effect to the local public by creating opportunities for fuelwood and pole harvest. Individuals would benefit from having a supply of products available for utilization opportunities. With a supply of products available for permitting, it is possible that fuelwood theft would decrease.

## **8. Resource: Fire and Fuels**

### **a. Affected Environment**

A fuel hazard and wildfire occurrence risk rating analysis was completed for the Jumpoff Joe Watershed Analysis (1998), which included the lands in the Granite Horse proposed project area. The data includes 17,982 acres of BLM administered lands, and 23,419 acres of private lands, for a total of 41,401 acres, this includes the Joe Louse Deferred Watershed lands. See Map A-1.

*Hazard* is defined as the existence of a fuel complex that constitutes a threat of wildfire ignition, unacceptable fire behavior and severity, or suppression difficulty. *Risk* is the source of ignition be it human or lightning. Wildfire occurrence *risk* for all lands in the project area is rated as high overall. Acreage ratings are shown in Table 3-7.

<b>Table 3-5: Fire Occurrence Risk Rating by Acres and Percent for 41,401 Acres Of Lands Within the Landscape of the Granite Horse Project Area EA</b>			
Condition	High Risk	Moderate Risk	Low Risk
All Ownerships	64 % 26,422 acres	28 % 11,654 acres	8 % 3,325 acres
BLM Ownership	45 % 8,004 acres	41 % 7,298 acres	14 % 2,680 acres
Private Ownership	79 % 18,418 acres	19 % 4,356 acres	2 % 645 acres

The fire risk rating assigned for watershed analysis was determined during field data collection in 1996 and 1997. The current high level of risk is primarily due to human use and historical lightning activity within the project area. Risk is difficult to change or influence through land management activity as it is a function of weather events (lightning) and human behavior. Reducing public access can reduce human caused fire and affect risk, but reducing access for fire suppression forces can increase fire size and effects. Human use in the future would be expected to increase but the influence in terms of affecting risk is difficult to determine. Therefore, for the purpose of this analysis, risk is considered unchanged for the 20 year analysis period.

Fuel includes dead and down woody debris and live vegetation. The fuel ***hazard*** it creates is dynamic and changes over time and can be altered through land management activities. The natural process of wildfire occurrence prior to settlement in the 1800's prevented large scale fuels build-up. This fire regime was one of frequent, low-intensity surface fires which prevented excessive understory vegetation development and the build-up of large amounts of dead and down woody debris. With human settlement and the suppression of wildfire, fuels have been allowed to accumulate and dense vegetation has grown unchecked. Fuel hazard will increase over time in the absence of disturbance or land management activities which remove or reduce fuels. Without disturbance, fuel hazard conditions become more uniform and continuous. This increases the potential for large, high severity fire occurrence. Dense, overstocked stands are a contributing factor to large stand replacement fire occurrence due to the closed canopy and ladder fuel presence. The Walker Mountain fire is an example. The fire was located in 35S-5W- Section 5, within the Granite Horse Project Area. This fire was ignited by lightening and by the time it was controlled the fire consumed 2,150 acres. Nearly 90% of the area burned was a high intensity, stand replacement fire.

Fire exclusion has produced a decrease in the acreage of meadow and oak woodland. These areas historically were fire dependent and maintained. Encroachment by conifers and shrub species have replaced and altered these habitat areas.

Table 3-8 lists the current fuel ***hazard*** ratings for all lands within the project area including Joe Louse Deferred Watershed lands. See Map A-1. These are based on the existing situation at the time of field data collection during the summer of 1996 and 1997.

<b>Table 3-6: Hazard Rating by Acres and Percent for 41,401 Acres Within the Landscape of the Granite Horse Project Area EA Current Condition</b>			
	High Hazard	Moderate Hazard	Low Hazard
All Ownerships	56 % 23,171 acres	38 % 15,972 acres	6 % 2,258 acres
BLM Ownership	47 % 8,422 acres	43 % 7,879 acres	10 % 1,681 acres
Private Ownership	63 % 14,749 acres	35 % 8,093 acres	2 % 577 acres

b. Environmental Effects

Projections on future hazard are based on current vegetation conditions and known trends of vegetation development in the plant associations. The trend for the next 20 year period is for increasing vegetation density and/or increasing dead and down fuel accumulation. Future management activity beyond this assessment is unknown, but it would affect the hazard so this assessment assumes no future activity.

The following assumptions were used in the assessment of effects of treatments on hazard. The time period maximum of 20 years is considered the longest time interval before further management activity would be prescribed. Treatments which harvest timber and/or cut vegetation without treating the slash increase the hazard rating to HIGH. Treatments that initially treat only portions of an area increase the hazard to HIGH in the long term. Hand piling and burning reduced the hazard rating to low in the short term. Density reduction treatments in both the overstory and understory with underburning or hand piling and burning reduce the hazard rating to LOW. Broadcast burning and underburning reduce the hazard rating to a LOW category. Understory treatments in conjunction with prescribed burning are considered beneficial in both the short and long term as the effect of ladder fuel reduction and stocking reduction creates a fuel profile that is less susceptible to fire reaching the tree crowns.

Stands that are not or will not be at or near mature conditions within the 20 year time frame are still susceptible to stand replacement from wildfire events due to conditions such as thin bark, high crown ratios, presence or ability to reestablish ladder fuels, and continued stand mortality. The trend in these stands is for treated and untreated areas to increase in hazard as vegetation in the understory increases, crown closure occurs, and dead and down fuels accumulate. For those stands that were under burned and are at or will reach mature conditions within the 20 year time frame, it was assumed that these stands would remain in the LOW hazard rating. Stands that are currently younger and in mid serial stage conditions, and would not have as much down fuel removed (hand pile burn units) increase in hazard by the long term period and return to the HIGH and MODERATE rating categories.

1) Alternative 1: No Action

The No Action Alternative would continue the current trend of increasing the fuel hazard over time. This alternative does nothing to reverse the trend of increasing fuel hazard. With the absence of natural, low-intensity, frequent fire occurrence, dead and down fuels and live fuels will increase over



time. The fuels buildup creates conditions that lead to high-intensity, stand replacement fire.

The current condition has 56% of the area of all land in the project area in a high hazard condition. Historically this would increase 5 to 10 % in a short time period. The shift to greater hazard condition is a result of the increasing dense stocking, multi-canopy nature of the much of the vegetation in the project area. The trend of increasing high hazard fuel conditions will continue if no hazard reduction treatments occur. The high hazard has the potential of increasing 15 to 20% of the current hazard in the 10 to 20 year long-term time frame.

## 2) Comparison of Alternative 2 and 3

Table E-5 shows the change in hazard ratings for all BLM administered lands. All management activities included in Alternatives 2 and 3 are analyzed along with the no action of Alternative 1. Future management is unknown at this time, so this assessment assumes no future activities other than the current Proposed Actions listed in tables B-1, B-2, and B-3.

The following changes in hazard ratings would occur if all the treatments are accomplished. These should be considered the maximum hazard reduction benefit. If less treatments occur then the reduction in high fuel hazard would be less.

<b>Table 3-7: Hazard Rating by Acres and Percent for BLM Lands Comparison of Alternatives Effect on Hazard Rating 17,982 Acres Of Land Within the Landscape of the Granite Horse Project Area EA</b>			
Condition	High Hazard	Moderate Hazard	Low Hazard
Current Condition	47 % 8,422 acres	43 % 7,879 acres	10 % 1,681 acres
Alt 1: No Action 5-10 Years	51 % 9,099 acres	41 % 7,347 acres	8 % 1,536 acres
	10-20 Years 63 % 11,395 acres	31 % 5,522 acres	6 % 1,056 acres
Alternative 2 5-10 Years	30 % 5,475 acres	43 % 7,781 acres	27 % 4,726 acres
	10-20 Years 47 % 8,473 acres	40 % 7,781 acres	13 % 2,347 acres
Alternative 3 5-10 Years	30 % 5,475 acres	43 % 7,781 acres	27 % 4,726 acres
	10-20 Years 47 % 8,473 acres	43 % 7,318 acres	12 % 2,191 acres

Approximately 30% of the BLM lands are in a HIGH hazard condition in the short term as a result of the harvest and hazard reduction treatments in the Action Alternatives 2 and 3. The No Action results in a HIGH hazard on 51% of the lands in the same period. In the long term 63% of the acres are in a HIGH hazard condition with the No Action Alternative.

Alternatives 2 and 3 have beneficial effects on the fuel hazard condition. Fuel hazard is reduced in both the long and short term under each alternative compared to the No Action Alternative. At the

landscape level, harvest and fuel treatment effects on hazard set back the trend of increasing hazard development over time. Percentage of acres in HIGH hazard under the Action Alternatives drop below the current HIGH hazard condition in the short term. The Action Alternatives keep the HIGH hazard condition below or equal to the current level for up to 20 years.

Alternative 2 and 3 have only minor differences in terms of effect on hazard conditions at the landscape level. The areas deferred from treatment would have a no fuel hazard reduction treatments and would therefore develop increasing hazard over time. This will place these stands at a higher risk for loss if a wildfire occurs. However, the fuel reduction treatments that do occur on the surrounding lands will decrease the risk of a large scale wildfire occurrence. This will reduce the potential of fire occurrence within the defer stands. This effect can not be quantified.

The effects of hazard reduction treatment in the Alternatives 2 and 3 are beneficial in reducing hazard conditions in both the long and short term. A wildfire occurrence within the treated areas would result in less severe effects due to the reduction in fuel amounts. The removal of dead and down fuel and ladder fuel from the forest areas reduces the amount of fuel available to burn when wildfire occurs in those areas. Wildfire will burn with less intensity, duration, and flame length. The proposed treatments would create areas of lower intensity burning which enable suppression forces opportunities to contain the fire spread. They also provide less fuel to "feed" a large fire and add to its energy. This increases the ability of fire suppression forces to protect forest resources, homes and structures and to limit the size of wildfire. Reducing the size and amount of high intensity burn area from a wildfire would have a short term beneficial effect in maintaining the forest and visual resources within the watershed, as well as reducing effects on stream and water quality.

c. Cumulative Effects

1) Alternative 1

The no action alternative allows the continuation of hazardous fuels to build up and increases the potential for large scale, catastrophic fire occurrence. This has the potential to impact both the project area and the adjacent drainage. Large scale catastrophic fire events are natural and are usually rare, however the Walker Fire is an example of a larger scale fire occurring in 1988. Impacts of the Walker Mountain Fire on visual, wildlife, and forest conditions were extreme with approximately 90% of the fire area burning at high intensities. Much of the impacts are still visible today. The percentage of acres that burn in high intensity could range from 30-60%, or higher, as seen with the Walker Mountain Fire, with as little as 20% or less burned with low intensity.

2) Alternatives 2 and 3

The proposed harvest and non-harvest stocking density reduction and fuel hazard reduction treatments in these Alternatives would substantially reduce the fuel hazard within the project area. This project complements other hazard reduction work accomplished in earlier land management projects to the North above Jack Creek. Together these can have the effect of substantially reducing the potential for adverse wildfire effects on the larger watershed basis.

When wildfire occurs the potential effects would include a mosaic of fire intensities. A wildfire of 100 acres or larger would exhibit areas of high intensity burning producing total stand replacement,

areas of low intensity underburn with little overstory mortality, and areas with a mixture of both extremes side by side. Location of the extreme fire effect areas would be a function of the presence of steep slopes, hot aspects, amount of fuel present, fuel continuity, presence of ladder fuels, and weather conditions at the time of fire occurrence. Vegetation density reduction and fuel reduction treatments will reduce the proportion of burned area in the higher intensity burn conditions. A wildfire occurrence following these treatments could have less than 20% of the area in high intensity and 50% or more experiencing low intensity burning.

Hazard reduction treatments require future maintenance treatments to retain desired fuel hazard conditions. These future treatments are not included within this assessment. It is anticipated that conditions created under Alternatives 2 and 3 would require similar future treatments for maintenance.

## **9. Resource: Recreation and VRM**

### **a. Affected Environment**

Recreational use of the area is dispersed and includes: equestrian use, hunting, driving for pleasure, hiking, and bicycling. Recreational use of the area follows existing roads and non-maintained trails in the area. There is a non-maintained trail along the ridge dividing the Jumpoff Joe Creek drainage and the Grave Creek drainage in sections 19 and 20 (T34S, R5W). This trail is currently receiving equestrian use as well as motorcycle use. There are steep pitches along the trail (greater than 30%). The trail ends when it enters Josephine County land to the west. There is evidence of OHV use in meadows adjacent to the ridgeline trail.

The proposed project area ranges from VRM Class II along the interstate to class IV, as delineated by the Medford District RMP.

### **b. Environmental consequences**

#### **1) Alternative 1: No Action**

In the no action alternative, trails would not be developed for recreational use, and the ridge trail system would remain as is, with steep pitches and motorized use off trail. Current trends of dispersed recreation on public as well as private lands would continue.

#### **2) Alternatives 2 and 3**

In alternatives 2 and 3, additional recreational opportunities will be provided through the upgrade and establishment of a trail system along the Horse Creek Ridge. Users will be encouraged to stay on trails and out of the meadows and sensitive serpentine areas through signing.

## **Chapter 4**

### **Agencies and Persons Consulted**

#### **A. Public Involvement**

All public input was considered by the planning and ID teams in developing the proposals and in preparing this EA.

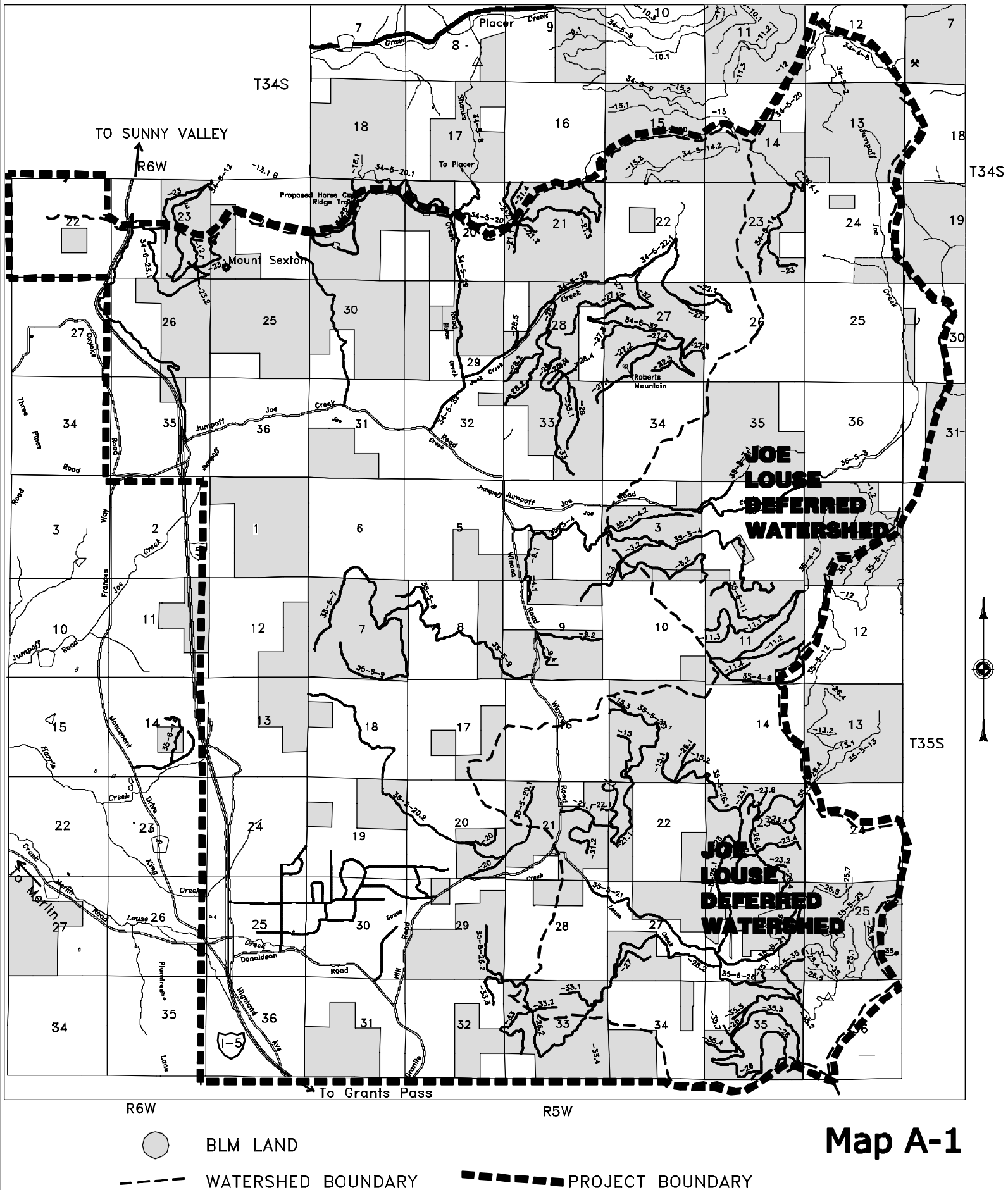
The following agencies were consulted during the planning process: Josephine County, United States Fish and Wildlife Service, National Marine Fisheries Service.

#### **B. Availability of Document and Comment Procedures**

Copies of the EA document will be available for formal public review in the BLM Medford District Office. A formal 30 day public comment period will be initiated by an announcement of the EA's availability in the Grants Pass Daily Courier newspaper.

# Granite Horse Landscape Management Project

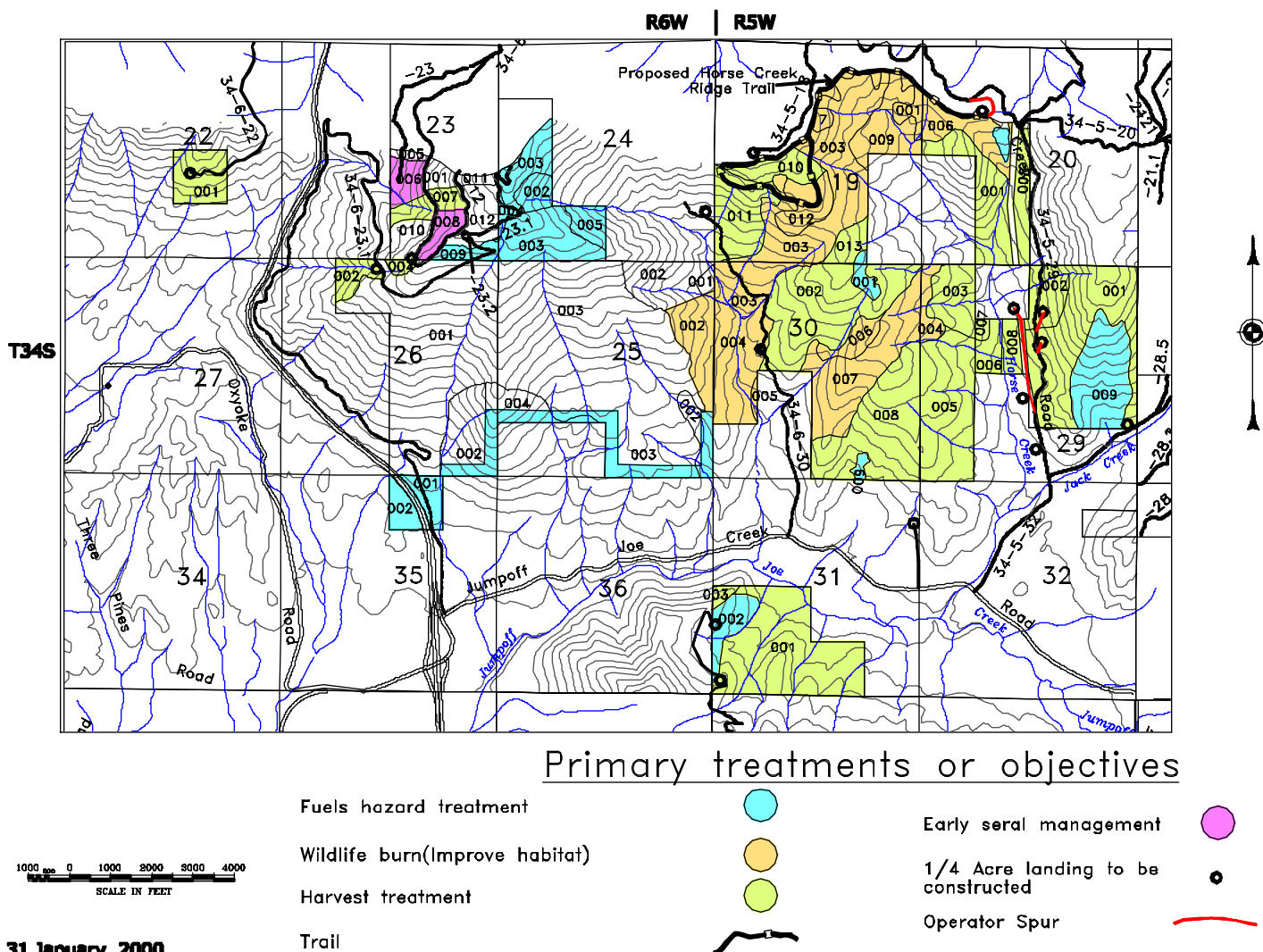
## Project Area Map



# Granite Horse Landscape Management Project

## Map A-2 - Treatments

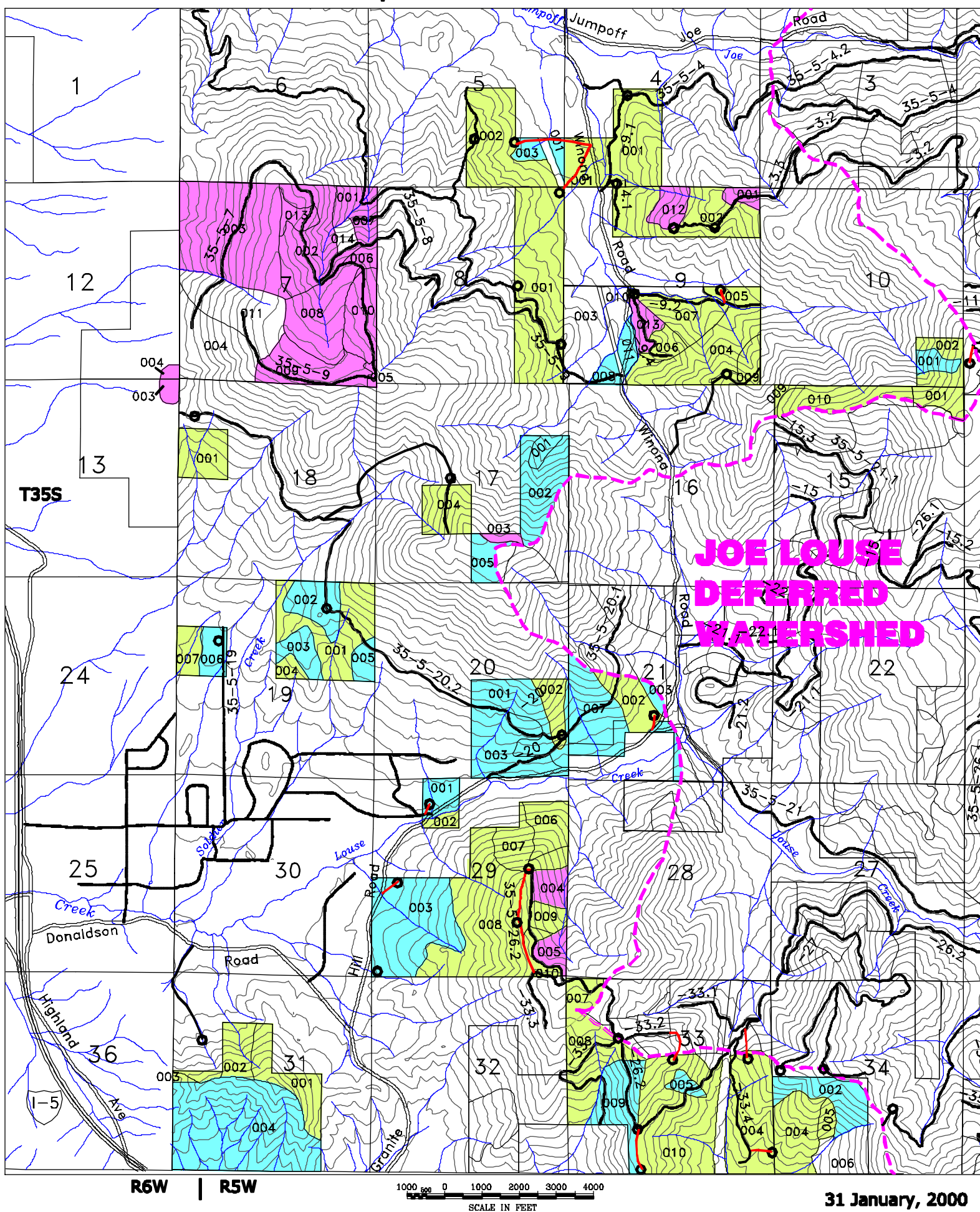
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# Granite Horse Landscape Management Project

## Map A-2 - Treatments

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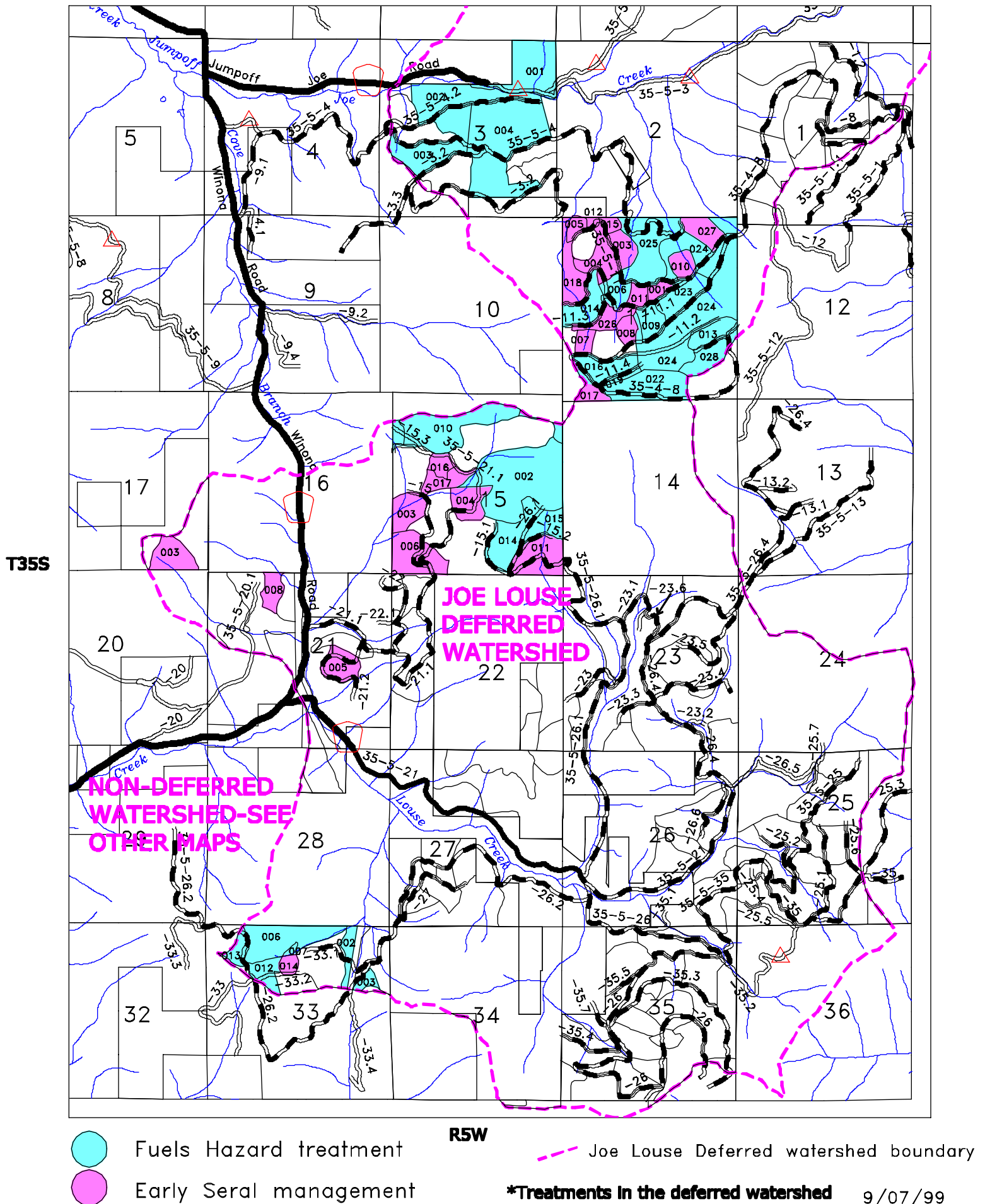




# Granite Horse Landscape Management Project

## Map A-2 -Treatments \*

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## Appendix B: Proposed Treatment Tables

TABLE B-1: Summary of Proposed Silviculture Treatments: Early Seral Stands									
BLM key #	T-R-Sec - OI	Proposed Treatment			Land Alloc.	TPCC <sup>1</sup>	Stand Birth year	Slash <sup>2</sup> Treatment	Estimated year of treatment
		BRUSH (Acres)	PCT (Acres)	PRUNE (Acres)					
Stands <i>outside</i> of the Joe Louse Deferred Watershed Area									
114982	34S-06W-23-006	22			Matrix / Riparian Res	RTR	1994	HP	2002
114984	34S-06W-23-008		16		Matrix / Riparian Res	RTR	1991	HP	2005
113021	35S-05W-07-001		20		Matrix / Riparian Res	RMR	1990	HP	2005
111033	35S-05W-07-002		91		Matrix / Riparian Res	RMR	1990	HP	2005
111034	35S-05W-07-003		148		Matrix / Riparian Res	RTR	1989	HP	2005
111036	35S-05W-07-005		5		Matrix / Riparian Res	RTR	1980	HP	2005
111037	35S-05W-07-006		11		Matrix / Riparian Res	RMR	1991	HP	2005
113022	35S-05W-07-007		17		Matrix / Riparian Res	RMR	1990	HP	2005
111038	35S-05W-07-008		67		Matrix / Riparian Res	RMR	1989	HP	2005
111039	35S-05W-07-009		52		Matrix / Riparian Res	RTR	1990	HP	2005
115800	35S-05W-07-010		44		Matrix / Riparian Res	RMR	1990	HP	2005
116293	35S-05W-07-013		18		Matrix / Riparian Res	RMR	1990	HP	2005
111041	35S-05W-09-001		12		Matrix / Riparian Res	RMR	1985	HP	2005
111044	35S-05W-09-004		84*	84	Matrix / Riparian Res	RMR	1963	HP	2000
113023	35S-05W-09-007		60*	60	Matrix / Riparian Res	RMR	1963	HP	2000
115799	35S-05W-09-012	21			Matrix / Riparian Res	RTR	1994	HP	2000
115798	35S-05W-09-013		14		Matrix / Riparian Res	RTR	1991	HP	2005
114771	35S-05W-29-004		25		Matrix / Riparian Res	RMR	1970	HP	2002
114772	35S-05W-29-005		19		Matrix / Riparian Res	RMR	1970	HP	2002
115590	35S-06W-12-004	6			Matrix / Riparian Res	RSW	1994	HP	2003
115988	35S-06W-13-003		7		Matrix / Riparian Res	RTR	1990	HP	2005
115989	35S-06W-13-004	15			Matrix / Riparian Res	RTR	1993	HP	2003
Sub - Total		64	710	144					
Stands <i>within</i> the Joe Louse Deferred Watershed Area									
113920	35S-05W-11-001		12		Matrix / Riparian Res	RMR	1980	HP	2000
113024	35S-05W-11-003			14	Matrix / Riparian Res	RMR	1977		2000
113025	35S-05W-11-004			18	Matrix / Riparian Res	RMR	1981		2000
113076	35S-05W-11-005			9	Matrix / Riparian Res	RTR	1973		2000
113902	35S-05W-11-007		11		Matrix / Riparian Res	RMR	1977	HP	2000
111144	35S-05W-11-008		9		Matrix / Riparian Res	RMR	1980	HP	2000
113913	35S-05W-11-010		13		Matrix / Riparian Res	RMW	1973	HP	2005
113914	35S-05W-11-011		6		Matrix / Riparian Res	RMR	1981	HP	2005
113915	35S-05W-11-012		5		Matrix / Riparian Res	RTR	1981	HP	2000
113917	35S-05W-11-015			5	Matrix / Riparian Res	RMR	1982		2000

**TABLE B-1: Summary of Proposed Silviculture Treatments: Early Seral Stands**

BLM key #	T-R-Sec - OI	Proposed Treatment			Land Alloc.	TPCC <sup>1</sup>	Stand Birth year	Slash <sup>2</sup> Treatment	Estimated year of treatment
		BRUSH (Acres)	PCT (Acres)	PRUNE (Acres)					
113906	35S-05W-11-017		15		Matrix / Riparian Res	RTR	1982	HP	2005
111056	35S-05W-11-018		21		Matrix / Riparian Res	RMR	1980	HP	2005
113918	35S-05W-11-026		19		Matrix / Riparian Res	RMR	1990	HP	2005
113919	35S-05W-11-027		16		Matrix / Riparian Res	RTR	1990	HP	2005
110218	34S-05W-15-008	25			Matrix / Riparian Res	RTR	1987	HP	2000
114520	34S-05W-21-006	31			Matrix / Riparian Res	RTR	1987	HP	2000
114170	35S-05W-15-004		22		Matrix / Riparian Res	RTR	1968	HP	2005
114171	35S-05W-15-006		31		Matrix / Riparian Res	RTR	1966	HP	2005
111074	35S-05W-15-011		31		Matrix / Riparian Res	RTR	1987	HP	2005
115797	35S-05W-15-012		34		Matrix / Riparian Res	RTR	1970	HP	2005
116521	35S-05W-15-016	9			Matrix / Riparian Res	RTR	1985	HP	2005
116522	35S-05W-15-017		15		Matrix / Riparian Res	RTR	1985	HP	2000
111077	35S-05W-17-003		22		Matrix / Riparian Res	RTR	1946	HP	2002
113877	35S-05W-21-005		18		Matrix / Riparian Res	RTR	1991	HP	2005
115795	35S-05W-21-008		13		Matrix / Riparian Res	RTR	1991	HP	2005
113908	35S-05W-33-014		11		Matrix / Riparian Res	RMR	1976	HP	2005
Sub Totals		65	324	46					
Total		129	1034	190					

Footnotes:

1)\* These units have also been identified for harvest of poles and small diameter sawtimber in the Mid seral table.

2) PCT-Precommercial thinning

TPCC (Timber Productivity Capability Classification): RTR - regeneration restricted due to hot temperatures and low soil moisture; RMR- regeneration restricted due to low soil moisture;

RSW- withdrawn due to surface rock

HP-Hand Pile and burn

TABLE B-2: Summary of Treatments for Timber Base lands with Stand Age older than 36 Years  
**Note: Shaded units indicate those in which there is a difference between Alternative 2 and Alternative 3.**

BLM Unit key #	T-R-SEC-OI	Acres	NFP land allocation/ VRM class/ other concerns	TPCC	Seral Stage <sup>2</sup> , Dominant Species <sup>3</sup>		Silviculture Prescription and Treatments <sup>4,8</sup>	Logging Systems by approx % of unit <sup>7</sup>			Slash Treatment and/or Understory Treatment <sup>5,8</sup>	Est. Harvest Volume (MBF)				Tree Plant Acres
					Current	Post Harvest		Tractor	Cable	Heli- copter		Harv./Treat. Acres <sup>6</sup>		Vol / Ac	Total MBF	
												SR	CT/ MGS			
114686	34S-05W-19-010	30	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS Rec. trail construction	20	50	30	UT, HP/B and/or UB,		30	6.0	180	0
114687	34S-05W-19-011	51	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS Rec. Trail construction	20	10	70	UT, HP/B and/or UB		30	6.0	180	0
114689	34S-05W-19-013	13	Matrix/ VRM III	RTR/ RMR	Mature Pine	Mature DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		7	5.0	35	0
112344	34S-05W-20-001	71	Matrix/ Riparian Res/VRM III/ RIA	RTR/ RMR	Mid DF	Mid DF	Harvest CT/MGS	20	20	60	UT, HP/B and/or UB		35	4.0	140	0
114676	34S-05W-20-008	21	Matrix/ Riparian Res / VRM III	RTR/ RMR	Mid DF	Mid DF	Harvest / Regenerate stand (SR)	30	70		UT, HP/B and/or UB	21		2.0	42	21
110261	34S-05W-29-001	135	Matrix/ VRM III RIA	RTR/ RMR	Mature Pine	Early Pine	Harvest / Regenerate stand (SR)/ CT/MGS	10		90	UT, HP/B and/or UB	50	50	2.0	100	50
110262	34S-05W-29-002	21	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest /CT/MGS	20	20	60	UT, HP/B and/or UB		21	5.0	105	0
110263	34S-05W-29-003	32	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		25	4.0	100	0
114238	34S-05W-29-005	109	Matrix/ VRM III RIA	RTR/ RMR	Mature DF	Mature DF	Harvest / Regenerate stand (SR) /CT/MGS			100	UT, HP/B and/or UB	50	35	2.0	170	50
114239	34S-05W-29-006	14	Matrix/ VRM III RIA	RTR/ RMR	Mature Pine	Mature Pine	Harvest /CT/MGS	50		50	UT, HP/B and/or UB		10	2.0	20	0
114240	34S-05W-29-007	5	Matrix/ VRM III RIA	RTR/ RMR	Mature Pine	Mature Pine	Harvest /CT/MGS			100	UT, HP/B and/or UB		5	4.0	20	0
114241	34S-05W-29-008	16	Matrix/ VRM III RIA	RTR/ RMR	Mid DF	Mid DF	Harvest / Regenerate stand (SR)/		100		UT, HP/B and/or UB	10		2.0	20	10
112358	34S-05W-30-002	126	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS	30		70	UT ,HP/B and/or UB		100	3.00	300	0
114669	34S-05W-30-008	120	Matrix/ VRM III RIA	RTR/ RMR	Mature DF	Early DF	Harvest / Regenerate stand (SR)/ CT/MGS	50		50	UT, HP/B and/or UB	50	80	2.0	260	50
110266	34S-05W-31-001	151	Matrix/ VRM III RIA	RTR/ RMR	Mature Pine	Early Pine	Harvest / Regenerate stand (SR)/ CT/MGS		30	70	UT, HP/B and/or UB	50	90	3.0	520	50
114679	34S-05W-31-003	5	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		50	50	UT, HP/B and/or UB		5	4.0	20	0
110320	34S-06W-22-001	40	Matrix/ VRM II	RTR/ RMR	Mature Pine	Mature Pine	Harvest / CT/MGS		50	50	UT, HP/B and/or UB		40	3.0	120	0

TABLE B-2: Summary of Treatments for Timber Base lands with Stand Age older than 36 Years  
**Note: Shaded units indicate those in which there is a difference between Alternative 2 and Alternative 3.**

BLM Unit key #	T-R-SEC-OI	Acres	NFP land allocation/ VRM class/ other concerns	TPCC	Seral Stage <sup>2</sup> , Dominant Species <sup>3</sup>		Silviculture Prescription and Treatments <sup>4,8</sup>	Logging Systems by approx % of unit <sup>7</sup>			Slash Treatment and/or Understory Treatment <sup>5,8</sup>	Est. Harvest Volume (MBF)				Tree Plant Acres
					Current	Post Harvest		Tractor	Cable	Heli- copter		Harv./Treat. Acres <sup>6</sup>		Vol / Ac	Total MBF	
												SR	CT/ MGS			
11498	34S-06W-23-007	38	Matrix/VRM II	RTR/ RMR	Late DF	Early DF	Harvest / Regenerate stand (SR)	50	50		UT, HP/B and/or UB	30		3.0	90	30
112366	34S-06W-26-002	14	Matrix/ VRM II	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		100		UT, HP/B and/or UB		10	2.0	20	0
11651	34S-06W-26-004	6	Matrix/ VRM II	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		100		UT, HP/B and/or UB		6	2.0	12	0
11240	35S-05W-04-001	114	Matrix/VRM III	RTR/ RMR	Mature DF	Early DF	Harvest / Regenerate stand (SR) CT/MGS	25	50	25	UT, HP/B and/or UB	40	50	5.0	450	50
11103	35S-05W-05-002	98	Matrix/ VRM III	RTR/ RMR	Mature DF	Early DF	Harvest / Regenerate stand (SR) CT/MGS		80	20	UT, HP/B and/or UB		65	3.0	195	
11240	35S-05W-08-001	157	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS /Regenerate stand (SR)		60	40	UT, HP/B and/or UB	50	50	3.0	300	
11104	35S-05W-09-002	79	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS	20	30	50	UT, HP/B and/or UB		65	5.0	325	
11104	35S-05W-09-003	58	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	No Harvest-owl core	0	0	0	none		0	0	0	
111044	35S-05W-09-004	84	Matrix/ Riparian Res/VRM III	RMR	Mid DF	Mid DF	Harvest / CT/MGS	80	20		UT, HP/B and/or UB		50	1	50	
111045	35S-05W-09-005	18	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS	100			UT, HP/B and/or UB		12	3.0	36	
111046	35S-05W-09-006	18	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		100		UT, HP/B and/or UB		18	1.0	18	
113023	35S-05W-09-007	60	Matrix/ Riparian Res/VRM III	RMR	Mid DF	Mid DF	Harvest / CT/MGS	50	50		UT, HP/B and/or UB		40	1	40	
111049	35S-05W-09-009	19	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		100		UT,HP/B and/or UB		15	3.0	45	
11105	35S-05W-09-010	13	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	no Harvest -owl core	0	0	0	none		0	0	0	
11240	35S-05W-10-002	24	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		100		UT, HP/B and/or UB		20	2.0	40	0
111068	35S-05W-15-001	38	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		50	50	UT, HP/B and/or UB		20	3.0	60	0
111072	35S-05W-15-009	10	Matrix / Riparian Res/VRM III	RTR/ RMR	Mid DF	Mid DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		10	2	20	0
111073	35S-05W-15-010	40	Matrix/ VRM III	RTW	Mature DF	Mature DF	Review TPCC, Harvest in non-deferred portion/		4	100	UT, HP/B and/or UB		40	3	120	0

TABLE B-2: Summary of Treatments for Timber Base lands with Stand Age older than 36 Years  
**Note: Shaded units indicate those in which there is a difference between Alternative 2 and Alternative 3.**

BLM Unit key #	T-R-SEC-OI	Acres	NFP land allocation/ VRM class/ other concerns	TPCC	Seral Stage <sup>2</sup> , Dominant Species <sup>3</sup>		Silviculture Prescription and Treatments <sup>4,8</sup>	Logging Systems by approx % of unit <sup>7</sup>			Slash Treatment and/or Understory Treatment <sup>5,8</sup>	Est. Harvest Volume (MBF)				Tree Plant Acres
									Harv./Treat. Acres <sup>6</sup>			Vol / Ac	Total MBF			
									SR	CT/ MGS						
111078	35S-05W-17-004	40	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS	20	50	30	UT, HP/B and/or UB		40	3.0	120	0
112410	35S-05W-18-001	35	Matrix/ Riparian Res/VRM III	RTR/ RMR	mid DF	mid DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		35	2.0	70	0
111081	35S-05W-19-001	79	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS		50	50	UT, HP/B and/or UB		40	2	80	
114609	35S-05W-19-004	10	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		10	3.0	30	
11461	35S-05W-19-007	16	Matrix/ VRM II	RTR/ RMR	Mid Pine	Mid Pine	Harvest / CT/MGS			100	UT, HP/B and/or UB		10	2	20	
114649	35S-05W-20-002	30	Matrix/ VRM III	RTR/ RMR	Late Pine	Early Pine	Harvest / Regenerate stand (SR)		100		UT, HP/B and/or UB	30		3.0	90	30
111083	35S-05W-21-002a	50	Matrix/ VRM III	RTR/ RMR	Late DF	Early DF	Harvest / Regenerate stand (SR) (harvest is in non- deferred portion)	50	50		UT, HP/B and/or UB	30		3.0	90	30
111117	35S-05W-29-002	6	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest CT/MGS			100	UT, HP/B and/or UB		6	3.0	9	
114773	35S-05W-29-006	26	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest CT/MGS		50	50	UT, HP/B and/or UB		15	2.0	30	
114774	35S-05W-29-007	25	Matrix/ VRM III	RTR/ RMR	Mature DF	early DF	Harvest / Regenerate stand (SR)	10	60	30	UT, HP/B and/or UB	20		5	100	20
114775	35S-05W-29-008	169	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest in areas with merch sizes CT/MGS	30	50	20	UT, HP/B and/or UB		80	2	160	
114776	35S-05W-29-009	16	Matrix/ VRM III	RTR/ RMR	Mature DF	Early DF	Harvest / Regenerate stand (SR)		100		UT, HP/B and/or UB	15		2	30	
114777	35S-05W-29-010	12	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS	50	50		UT, HP/B and/or UB		12	2	24	
111120	35S-05W-31-001	52	Matrix/ VRM II	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		35	2	70	
111121	35S-05W-31-002	22	Matrix/ VRM II	RTR/ RMR	Mature DF	Mature DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		22	2	44	
112962	35S-05W-31-003	5	Matrix/ Riparian Res/VRM II	RTR/ RMR	Mid DF	Mid DF	Harvest / CT/MGS			100	UT, HP/B and/or UB		5	2	10	
113944	35S-05W-31-004	201	Matrix/ VRM II	RTR/ RMR	Mature DF	Mature DF	Harvest along ridge top where there are merch sizes CT/MGS			100	UT, HP/B and/or UB		10	2	20	

TABLE B-2: Summary of Treatments for Timber Base lands with Stand Age older than 36 Years  
**Note: Shaded units indicate those in which there is a difference between Alternative 2 and Alternative 3.**

BLM Unit key #	T-R-SEC-OI	Acres	NFP land allocation/ VRM class/ other concerns	TPCC	Seral Stage <sup>2</sup> , Dominant Species <sup>3</sup>		Silviculture Prescription and Treatments <sup>4,8</sup>	Logging Systems by approx % of unit <sup>7</sup>			Slash Treatment and/or Understory Treatment <sup>5,8</sup>	Est. Harvest Volume (MBF)				Tree Plant Acres
					Current	Post Harvest		Tractor	Cable	Heli- copter		Harv./Treat. Acres <sup>6</sup>		Vol / Ac	Total MBF	
												SR	CT/ MGS			
111125	35S-05W-33-004	84	Matrix/ VRM III	RTR/ RMR	Mature Pine	Mature DF	Harvest CT/MGS	30	30	40	UT, HP/B and/or UB		30	2	60	
111128	35S-5W-33-007	30	Matrix / VRM III	RMR /RTR	Mature DF	Mature DF	Harvest CT/MGS	50	50		UT, HP/B and/or UB		30	2	60	
114786	35S-05W-33-008	67	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest CT/MGS	20	60	20	UT, HP/B and/or UB		60	2	120	
114788	35S-05W-33-010	134	Matrix/ Riparian Res/VRM III	RTR/ RMR	Mid DF	Mid DF	Harvest CT/MGS	30	30	40	UT, HP/B and/or UB		70	3	210	
112438	35S-05W-34-004	59	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest CT/MGS			100	UT, HP/B and/or UB		50	3	150	
114782	35S-05W-34-005	21	Matrix/ VRM III	RTR/ RMR	Mature DF	Mature DF	Harvest CT/MGS			100	UT, HP/B and/or UB		15	3	45	
							Percentage of Each Logging System	16	37	50	Total by Cutting Method	452	1609			
	Total OI Unit Acreage	3037					Total Acres of Each Logging System	333	772	1036	Total Harvest Area	2061		Total MBF	5795	

Footnotes: 1) TPCC (Timber Productivity Capability Classification): RTR - regeneration restricted due to hot temperatures and low soil moisture; RMR- regeneration restricted due to low soil moisture. RTW -withdrawn due to hot temperatures  
2) Stand Seral Stage: (Typical of many units in the forests of southwest Oregon, a unit may be fairly heterogeneous with regards to vegetation type, structure, ages and ecological processes. The seral stage indicated here is a generalize description of the unit.)  
Early - Vegetation is dominated by shrubs or conifers and hardwood trees in a seedling/ sapling size class (<5"DBH)  
Mid - Vegetation is tree dominated. Trees at least small pole size (>4"DBH). Larger scattered trees may be present.  
Mature - Forest has begun to differentiate into distinct canopy layers. Overstory dominant and codominant trees are conifers greater than 20" DBH, understory trees will be conifer-hardwood mix.  
Old Growth - Stand is multilayered and has at least two distinct canopy layers. Large conifer trees greater than 35" DBH number 8+/ac.  
3) Dominant Species: DF = Douglas-fir  
4) Treatments: CT/MGS - Commercial Thin/Modified Group Selection SR-Structural Retention  
5) Slash/Understory Treatments: UT-Understory Thinning HP/B-Hand Pile and Burn UB-Underburn  
6) Harvest acres vs. Unit acres: The difference in these acreages is attributable to large variability within the unit, unit inclusions of riparian reserves, non-forest, etc.  
7) Logging systems may vary if operator has obtained permission to use private property for access.  
8) Some variation of prescriptions and treatments may occur within a unit in response to (and to capitalize on) stand and site variations within the unit.

**TABLE B-3: Summary of Silviculture Prescription - Fuels**

BLM Unit Key #	T-R-Sec-OI	Unit Acres	Land Alloc.	TPCC	Silv. Prescription/Treatment Objectives	Treatment Acres	Vegetation Treatment	Prescribe Burn Treatment
<b>Units outside of the Joe Louse Deferred Watershed Area</b>								
110235	34S-05W-19-003	150	Matrix / Riparian Res	LSW	Wildlife Burn - FHRA	150		BCB
114685	34S-05W-19-009	46	Matrix / Riparian Res	FNNW	Wildlife Burn	46		BCB
114688	34S-05W-19-012	31	Matrix / Riparian Res	FNNW	Wildlife Burn - FHRA	31	UT	BCB, HP/B
115931	34S-05W-19-015	2	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	2	UT	HP/B
114674	34S-05W-20-006	35	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	35	UT	UB, HP/B
114675	34S-05W-20-007	5	Matrix / Riparian Res	FNNW	Fuel Hazard Reduction Area	5	UT	HP/B
110264	34S-05W-29-004	19	Matrix / Riparian Res	LSW	NONE	0	NONE	NONE
114242	34S-05W-29-009	75	Matrix / Riparian Res	RTR	Fuel Hazard Reduction Area, RIA	75	UT	HP/B
112357	34S-05W-30-001	8	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	8	UT	HP/B
114664	34S-05W-30-003	46	Matrix / Riparian Res	LSW	Wildlife Burn	46		BCB
114665	34S-05W-30-004	65	Matrix / Riparian Res	FNNW	RIA	20	UT	HP/B
114666	34S-05W-30-005	6	Matrix / Riparian Res	LSW	RIA	6	UT	HP/B
114667	34S-05W-30-006	23	Matrix / Riparian Res	FNNW	Wildlife Burn	23		BCB
114668	34S-05W-30-007	94	Matrix / Riparian Res	LSW	Wildlife Burn, RIA, FHRA	94	UT	BCB, HP/B
114670	34S-05W-30-009	5	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	5	UT	HP/B
114678	34S-05W-31-002	25	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	25	UT	HP/B
110321	34S-06W-23-001	14	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	14		UB
114985	34S-06W-23-009	10	Matrix / Riparian Res	LSW	Wildlife Burn	10		BCB
112362	34S-06W-24-002	12	Matrix / Riparian Res	FNNW	Fuel Hazard Reduction Area	12	UT	HP/B
112363	34S-06W-24-003	70	Matrix / Riparian Res	LSW	Wildlife Burn, FHRA	70	UT	BCB, HP/B
114980	34S-06W-24-005	21	Matrix / Riparian Res	FNNW	Fuel Hazard Reduction Area	21	UT	HP/B
110326	34S-06W-25-001	7	Matrix / Riparian Res	LSW	NONE	0	NONE	NONE
110327	34S-06W-25-002	120	Matrix / Riparian Res	FNNW	RIA	5	UT	HP/B
110328	34S-06W-25-003	400	Matrix / Riparian Res	LSW	RIA	50	UT	HP/B
110329	34S-06W-25-004	33	Matrix / Riparian Res	FNNW	RIA	15	UT	HP/B
112366	34S-06W-26-002	14	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	14	UT	UB
112367	34S-06W-26-003	60	Matrix / Riparian Res	FNNW	Fuel Hazard Reduction Area, RIA	25	UT	HP/B
110341	34S-06W-35-001	15	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area, RIA	15	UT	HP/B
110342	34S-06W-35-002	16	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area, RIA	16	UT	HP/B

**TABLE B-3: Summary of Silviculture Prescription - Fuels**

BLM Unit Key #	T-R-Sec-OI	Unit Acres	Land Alloc.	TPCC	Silv. Prescription/Treatment Objectives	Treatment Acres	Vegetation Treatment	Prescribe Burn Treatment
115354	34S-06W-35-003	8	Matrix / Riparian Res	NH	NONE	0	NONE	NONE
111029	35S-05W-05-001	6	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	6	UT	HP/B
111031	35S-05W-05-003	7	Matrix / Riparian Res	RSW	RIA	7	UT	HP/B
111035	35S-05W-07-004	75	Matrix / Riparian Res	RSW	NONE	0	NONE	NONE
115984	35S-05W-07-011	71	Matrix / Riparian Res	RSW	NONE	0	NONE	NONE
115985	35S-05W-07-012	2	Matrix / Riparian Res	RSW	NONE	0	NONE	NONE
115987	35S-05W-07-014	10	Matrix / Riparian Res	RMR	NONE	0	NONE	NONE
111048	35S-05W-09-008	12	Matrix / Riparian Res	RSW	Fuel Hazard Reduction Area	12	UT	HP/B
111051	35S-05W-09-011	7	Matrix / Riparian Res	RSW	Fuel Hazard Reduction Area	7	UT	HP/B
112408	35S-05W-10-001	16	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	16	UT	UB
111073	35S-05W-15-010	95	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	40	UT	HP/B
111230	35S-05W-17-001	16	Matrix / Riparian Res	RMW	NONE	0	NONE	NONE
111076	35S-05W-17-002	90	Matrix / Riparian Res	RMW	NONE	0	NONE	NONE
111078	35S-05W-17-004	40	Matrix / Riparian Res	RTW	NONE	0	NONE	NONE
111079	35S-05W-17-005	30	Matrix / Riparian Res	FNNW	NONE	0	NONE	NONE
114607	35S-05W-19-002	39	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	20	UT	HP/B
114608	35S-05W-19-003	23	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	10	UT	HP/B
114610	35S-05W-19-005	15	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	15	UT	HP/B
114611	35S-05W-19-006	18	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area	18	UT	HP/B
112411	35S-05W-20-001	56	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area, RIA	56	UT	HP/B
114650	35S-05W-20-003	70	Matrix / Riparian Res	FNNW	Fuel Hazard Reduction Area, RIA	70	UT	HP/B
111084	35S-05W-21-003	20	Matrix / Riparian Res	RSW	Fuel Hazard Reduction Area	10	UT	HP/B
111085	35S-05W-21-004	11	Matrix / Riparian Res	FNNW	NONE	0	NONE	NONE
111086	35S-05W-21-006	11	Matrix / Riparian Res	NU	Fuel Hazard Reduction Area, RIA	11	UT	HP/B
114012	35S-05W-21-007	105	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area, RIA	65	UT	HP/B
111116	35S-05W-29-001	23	Matrix / Riparian Res	LSW	Fuel Hazard Reduction Area, RIA	23	UT	HP/B
113944	35S-05W-31-004	201	Matrix / Riparian Res	NA	Fuel Hazard Reduction Area	122	UT	HP/B
111126	35S-05W-33-005	12	Matrix / Riparian Res	RTW	NONE	0	NONE	NONE
114787	35S-05W-33-009	59	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area, RIA	45	UT	HP/B
112437	35S-05W-34-002	50	Matrix / Riparian Res	RTW	NONE	0	NONE	NONE



**TABLE B-3: Summary of Silviculture Prescription - Fuels**

BLM Unit Key #	T-R-Sec-OI	Unit Acres	Land Alloc.	TPCC	Silv. Prescription/Treatment Objectives	Treatment Acres	Vegetation Treatment	Prescribe Burn Treatment
	<b>Total Unit Acres</b>	<b>2625</b>			<b>Total Treatment Acres</b>	<b>1391</b>		
<b><u>Stands within the Joe Louse Deferred Watershed Area</u></b>								
111124	35S-05W-33-003	9	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	6	UT	HP/B
111123	35S-05W-33-002	17	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	10	UT	HP/B
111127	35S-05W-33-006	49	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	20	UT	HP/B
111128	35S-05W-33-007	35	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	20	UT	HP/B
114791	35S-05W-33-013	17	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	5	UT	HP/B
111069	35S-05W-15-002	109	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	50	UT	HP/B
116327	35S-05W-15-015	61	Matrix / Riparian Res	RTR	Fuel Hazard Reduction Area	40	UT	HP/B
111068	35S-05W-15-001	38	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	20	UT	HP/B
111073	35S-05W-15-010	95	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	60	UT	HP/B
111072	35S-05W-15-009	28	Matrix / Riparian Res	RTR	Fuel Hazard Reduction Area	28	UT	HP/B
111020	35S-05W-03-001	49	Matrix / Riparian Res	RTR	Fuel Hazard Reduction Area	49	UT	HP/B
111021	35S-05W-03-002	47	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	47	UT	HP/B
113267	35S-05W-03-003	58	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	35	UT	HP/B
111022	35S-05W-03-004	90	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	45	UT	HP/B
112578	35S-05W-11-006	16	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	16	UT	HP/B
112403	35S-05W-11-009	14	Matrix / Riparian Res	RMW	Fuel Hazard Reduction Area	14	UT	UB, HP/B
113903	35S-05W-11-013	17	Matrix / Riparian Res	RMW	Fuel Hazard Reduction Area	17	UT	UB, HP/B
113904	35S-05W-11-014	29	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	29	UT	UB, HP/B
113905	35S-05W-11-016	20	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	20	UT	UB, HP/B
111060	35S-05W-11-022	37	Matrix / Riparian Res	RTW	Fuel Hazard Reduction Area	20	UT	HP/B
111061	35S-05W-11-023	22	Matrix / Riparian Res	RMW	Fuel Hazard Reduction Area	22	UT	UB, HP/B
111062	35S-05W-11-024	133	Matrix / Riparian Res	RMW	Fuel Hazard Reduction Area	65	UT	UB, HP/B
111063	35S-05W-11-025	70	Matrix / Riparian Res	RMR	Fuel Hazard Reduction Area	70	UT	HP/B
	<b>Total Unit Acres</b>	<b>1060</b>			<b>Total Treatment Acres</b>	<b>708</b>		

Footnotes and acronyms:

1) **Prescription objectives and treatments:** **UT** - *Understory Thinning* - understory thin vegetation to less than 7" DBH spacing widths ranging from 15' to 45'. **HP/B** - *Hand pile and burn slash* 1" to 6" x 2', cover, and burn piles. **UB** - *Underburn* - mosaic or spot burn under reserved overstory. **NONE** - *no treatment* at this time is recommended. **FHRA** - *Fuel Hazard Reduction Area* - area where understory thinning (UT), hand pile and burn (HP/B) and underburning (UB) would occur to reduce the impacts of wildland fire. **RIA** - *Rural Interface Area* - treatments similar to FHRA concentrated along BLM and private property boundary lines. **Wildlife Burn** - wildlife enhancement and meadow restoration using understory thinning (UT) and underburning (UB).

2) **TPCC(Timber Productivity Capability Classification):** **RTR** - regeneration restricted due to hot temperatures and low soil moisture; **RMR** - regeneration restricted due to low soil moisture; **RTW** - withdrawn due to hot temperatures; **RSW** - withdrawn due to surface rock; **LSW** - withdrawn due to low site; **FNR** - regeneration restricted due to imbalanced nutrients (serpentine); **FNNR** - withdrawn fragile site nutrients.

## Appendix C: Road Information

Table C: Proposed Road Use, Construction, Renovation, Improvement, Maintenance and Closures of Roads used for Haul

Road Number/ Road Segment	Road Control	Total Length (miles)	Current Condition/ Surface	Miles of Proposed Treatment:				COMMENTS	Road Closures
				Maintenance	Construction	Renovation	Decommis- sioning		
35-4-8A	BLM	0.67	ASC	0.67					
35-4-8B	BLM	2.14	ASC	2.14					
35-4-8C	BLM	0.68	ASC	0.68					
35-4-8D1	BLM	0.30	ASC	0.30					
35-4-8D2	BLM	0.59	ASC	0.59					
35-4-8E	BLM	0.06	ASC	0.06					
35-4-8F	BLM	1.59	PRR	1.59	H			Construct Helicopter landing in Section 11	
35-4-8G1	BLM	0.78	GRR	0.78					
35-4-8G2	BLM	0.55	GRR	0.55					
35-5-11A	BLM	0.37	ASC	0.37					
35-5-11B	BLM	1.05	PRR	1.05					
35-5-11.1A	BLM	1.05	PRR	1.05					
35-5-11.1B	BLM	0.11	GRR	0.11					
35-5-11.2	BLM	0.67	NAT	0.67					
35-5-11.3	BLM	0.38	GRR	0.38					
35-5-11.4	BLM	0.29	GRR	0.29					
35-5-26.1A	BLM	1.70	ASC	1.70					
35-5-26.1B	BLM	1.66	PRR	1.66					
35-5-26.2A	BLM	2.07	ASC	2.07					
35-5-26.2B	BLM	2.85	PRR	2.85	0.30 H		0.30 H	Construct / decommission road extension. Construct / decommission Helicopter landing in Sections 29 & 33	
35-5-27	BLM	0.63	PRR	0.63				This road connects to County roads in Section 34	
35-5-33A	BLM	0.34	NAT	0.34					
35-5-33B	PVT	0.05	NAT	0.05					
35-5-33C	BLM	0.05	NAT	0.05					
35-5-33D	BLM	0.44	NAT	0.44					

Table C: Proposed Road Use, Construction, Renovation, Improvement, Maintenance and Closures of Roads used for Haul

Road Number/ Road Segment	Road Control	Total Length (miles)	Current Condition/ Surface	Miles of Proposed Treatment:				COMMENTS	Road Closures
				Maintenance	Construction	Renovation	Decommis- sioning		
35-5-33.1	BLM	0.66	PRR	0.66					
35-5-33.2	BLM	0.28	NAT	0.28	H			Construct Helicopter landing at end of road	
35-5-33.4	BLM	0.75	NAT	0.75	H			Construct Helicopter landing at end of road and utilize wide areas in the road prism for other landings as needed	
35-5-19	BLM	0.25	ASC	0.25	H			Spot rock as needed	
35-5-21A	BLM	1.67	BST	1.67					
35-5-21B	BLM	1.26	ASC	1.26					
35-5-20A	BLM	0.51	NAT	0.51	H		H	Construct / Decommission Helicopter landing at junction with Road 35-5-20.1	
35-5-20B	BLM	0.50	NAT	0.50					
35-5-20C	BLM	0.50	NAT	0.50					
35-5-20.1	BLM	1.56	NAT	1.56					
35-5-20.2A	BLM	0.10	NAT	0.10				Under M1538 agreement	
35-5-20.2B	PVT	0.19	NAT	0.19					
35-5-20.2C	PVT	0.40	NAT	0.40					
35-5-20.2D	BLM	0.49	NAT	0.49	H			Construct Helicopter landing in Section 19. Under M1538 agreement	
35-5-20.2E	PVT	0.27	NAT	0.27					
35-5-20.2F	PVT	0.10	NAT	0.10					
35-5-20.2G	PVT	0.38	NAT	0.38					
35-5-20.2H	PVT	0.87	NAT	0.87	H			Construct Helicopter landing in Section 18	
35-5-21.1A	BLM	1.10	PRR	1.10					
35-5-21.1B	BLM	0.59	PRR	0.59					
35-5-21.1C	BLM	0.71	PRR	0.71					
35-5-21.1D	BLM	0.78	NAT	0.78					
35-5-21.2	BLM	0.74	GRR	0.74					
35-5-15	BLM	0.24	NAT	0.24					
35-5-15.1	BLM	0.39	PRR	0.39					
35-5-15.2	BLM	0.27	PRR	0.27					

Table C: Proposed Road Use, Construction, Renovation, Improvement, Maintenance and Closures of Roads used for Haul

Road Number/ Road Segment	Road Control	Total Length (miles)	Current Condition/ Surface	Miles of Proposed Treatment:				COMMENTS	Road Closures
				Maintenance	Construction	Renovation	Decommis- sioning		
35-5-15.3	BLM	0.24	NAT	0.24	H			Construct Helicopter landing at end of road	
35-5-9.1	BLM	0.61	ASC	0.61					
35-5-9.2A	BLM	0.47	NAT	0.47					
35-5-9.2B	BLM	0.23	NAT	0.23					
35-5-9.4	BLM	0.50	NAT	0.50					
35-5-9A	BLM	1.70	NAT	1.70	H			Construct Helicopter landing in Section 8	
35-5-9B	BLM	0.30	NAT	0.30					
35-5-9C	BLM	0.40	NAT	0.40					
35-5-9D	BLM	1.37	NAT	1.37					
35-5-9E	BLM	0.39	NAT	0.39					
35-5-8	BLM	0.57	NAT	0.57					
35-5-7A	BLM	0.80	NAT	0.80					
35-5-7B	BLM	1.02	NAT	1.02					
35-5-4A	PVT	0.32	NAT	0.32					
35-5-4B	BLM	0.17	ASC	0.17	H			Construct Helicopter landing at junction with Road 35-5-9.1	
35-5-4C	BLM	0.12	ASC	0.12					
35-5-4D	BLM	0.27	ASC	0.27					
35-5-4E	BLM	0.48	ASC	0.48					
35-5-4F	BLM	2.88	ASC	2.88					
35-5-4.1	BLM	0.27	ASC	0.27	H			Construct Helicopter landing	
35-5-4.2	BLM	1.05	ABC	1.05					
35-5-3A	BLM	0.30	NAT	0.30					
35-5-3.2	BLM	2.04	ASC	2.04					
35-5-3.3	BLM	0.53	ASC	0.53	H			Construct Helicopter landing at end of road	
34-5-32A	BLM	0.64	ASC	0.64					
34-5-32B	BLM	0.48	ASC	0.48					
34-5-29A	BLM	0.24	ASC	0.24					

Table C: Proposed Road Use, Construction, Renovation, Improvement, Maintenance and Closures of Roads used for Haul

Road Number/ Road Segment	Road Control	Total Length (miles)	Current Condition/ Surface	Miles of Proposed Treatment:				COMMENTS	Road Closures
				Maintenance	Construction	Renovation	Decommis- sioning		
34-5-29B	BLM	0.93	ASC	0.93					
34-5-29C	BLM	0.54	ASC	0.54					
34-5-30	BLM	0.82	NAT	0.82	H	0.82		Construct Helicopter landings in Sections 19 & 30	
34-5-20.1	BLM	1.46	NAT	1.46	H		H	Construct / Decommission 3 Helicopter landings with short spurs off of road	
34-5-18	BLM	0.61	NAT	0.61					
34-6-12A	BLM	0.62	BST	0.62					
34-6-12B	BLM	1.97	ASC	1.97					
34-6-12C	BLM	0.42	ASC	0.42					
34-6-12D	BLM	0.50	ASC	0.50					
34-6-12E	BLM	1.62	ASC	1.62					
34-6-12F	BLM	0.29	NAT	0.29					
34-6-22	PVT	1.00	NAT	1.00				Need Right of Way from Rough & Ready	
34-6-23	BLM	0.97	NAT	0.97					
34-6-23.1	BLM	0.90	NAT	0.90					
34-6-23.2	BLM	0.94	NAT	0.94	H		H	Construct / Decommission Helicopter landing	
34-6-11.1A	BLM	0.83	ASC	0.83					
34-6-11.1B	BLM	1.83	ASC	1.83					
34-6-15.1	BLM	1.10	NAT	1.10					
T35S,R5W, SEC 31 TEMP SPUR	PVT	0.25	NAT	0.25		0.25		Temporary access from private owner (Carda) in 35-5-31	
T35S,R5W, SEC 29 TEMP SPUR	BLM	0.10	NAT	0.10	H	0.10	0.10	Temporary spurs and helicopter landings, construct and decommission. Build from Granite Hill Road	Earth barricade
T35S,R5W, SEC 10	PVT	0.20	NAT	0.20				Need right of way from Josephine County	
T35S,R5W, SEC 6	PVT	1.15	NAT	1.15		1.15		Need right of way from Josephine County	
T35S,R5W, SEC 6	PVT	0.30	NAT	0.30		0.30		Need right of way from State of Oregon	

Table C: Proposed Road Use, Construction, Renovation, Improvement, Maintenance and Closures of Roads used for Haul

Road Number/ Road Segment	Road Control	Total Length (miles)	Current Condition/ Surface	Miles of Proposed Treatment:				COMMENTS	Road Closures
				Maintenance	Construction	Renovation	Decommis- sioning		
T35S,R5W, SEC 6	PVT	0.40	NAT	0.40				Easement has been acquired from Peterson	
T34S,R6W, SEC 36	PVT	0.40	NAT	0.40		0.40		Need right of way from Josephine County	
T35S,R5W, SEC 8	PVT	1.30	NAT	1.30		1.30		Need right of way from Josephine County	
T35S,R5W, SEC 5	BLM	0.65	PRR	0.65	H	0.65		BLM easement across Holland property, must maintain to landowners standards Need easement from Joachims/Mayfield. Construct Helicopter landing	
T35S,R5W, SEC 16	PVT	0.50	NAT	0.50		0.50		Need right of way from Josephine County	
T35S,R5W, SEC 17	PVT	0.50	NAT	0.50	H	0.50		Needs easement from Forever Green Forest Construct Helicopter landing	
T35S,R5W, SEC 18	PVT	0.50	NAT	0.50		0.50		Need right of way from Josephine County	
T35S,R5W, SEC 21 TEMP SPUR	PVT	0.10	NAT	0.10	H		0.10	Temporary access off Granite Hill road in Sec. 21 Construct / Decommission Helicopter landing	
T34S,R5W, SEC 20	BLM	0.20	NAT		0.20 H		0.20 H	Construct / Decommission (to trail width) spur off Road 34-5-20 Construct / Decommission Helicopter landing	
T34S,R5W, SEC 29 Power line Road	PVT	0.50	NAT	0.50	H	0.50		Needs easement from Portolla, Bates Construct Helicopter landings	
T34S,R5W, SEC 29 Spur along Horse Creek	PVT	0.25	NAT				0.25	This road will be fully decommissioned with some sections of full obliteration as determined to reduce erosion	Earth barricade
<b>TOTAL</b>		<b>79.67</b>		<b>79.22</b>	<b>0.50</b>	<b>6.97</b>	<b>0.95</b>		

**Footnotes:** BST=Bituminous Surface Treatment ASC= Aggregate Surface Coarse GRR= Grid Rolled Rock PRR= Pit Run Rock NAT= Natural Surface H = Construct Helicopter landing (approx. 100' x 200')

**Maintenance** may include surface grading, roadside brushing, for safety, spot rocking and maintaining existing drainage structures. Maintenance of natural surface roads may also include correcting drainage and erosion problems (e.g., improving or installing drainage dips, installing other drainage structures where needed, eliminating outside road edge berms or other features that are obstructing drainage where they exist).

**Full Decommissioning** consists of subsoil ripping of the roadbed to promote the establishment of vegetation and promote drainage consistent with the surrounding undisturbed areas. Existing culverts may be removed. Grass seeding of the road prism, fill slope and cutbank, and mulching of the Road prism may be included to minimize initial erosion potential prior to natural revegetation. An earth berm/tank trap barricade may be constructed at the beginning of each road to prevent use of the road prism following decommissioning.

**Road Renovation** consists of reconditioning and preparing the subgrade for heavy truck use, cleaning and shaping drainage ditches and structures, and trimming or removing vegetation from cut and fill slopes.

## **Appendix D: Projects and Alternatives Considered but Eliminated**

1. A number of stream enhancement projects were considered during the planning of the project. Three projects were considered in the Louse Creek drainage, an anadromous fish stream where the federal government manages very little of the main stem of the stream. The placement of large wood and boulders in T35S-R5W-Section 21 (OI 006) and Section 28 (OI 994) were considered but rejected due to active mining claim sites. A similar project was considered in T35S-R5W-Section 26 (OI 006) but was rejected as the overall benefit to anadromous fish was judged to be negligible.

## Appendix E: Glossary

### I. Acronyms/Abbreviations

<b>CT</b>	- Commercial thinning
<b>CWD</b>	- Coarse Woody Debris
<b>DBH</b>	- Diameter at breast height
<b>GFMA</b>	- General Forest Management Area
<b>GS</b>	- Group Selection
<b>IDT</b>	- Interdisciplinary team
<b>LSR(s)</b>	- Late Successional Reserve(s)
<b>LUA</b>	- Land Use Allocation
<b>MBF</b>	- Thousand Board Feet

<b>NEPA</b>	- National Environmental Policy Act
<b>OI</b>	- Operations Inventory
<b>PCT</b>	- Precommercial thinning
<b>RMP</b>	- Resource Management Plan
<b>ROD</b>	- Record of Decision
<b>SFP(s)</b>	- Special Forest Product(s)
<b>T&amp;E</b>	- Threatened and Endangered (species)
<b>TPCC</b>	- Timber Production Capability Classification
<b>VRM</b>	- Visual Resource Management

### II. Glossary (From Medford District RMP)

**Adaptive Management Areas** - Landscape units designated for development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives.

**Age Class** - One of the intervals into which the age range of trees is divided for classification or use.

**Allowable Sale Quantity (ASQ)** - The gross amount of timber volume, including salvage, that may be sold annually from a specified area over a stated period of time in accordance with the management plan. Formerly referred to as “allowable cut.”

**Anadromous Fish** - Fish that are born and reared in freshwater, move to the ocean to grow and mature, and return to freshwater to reproduce. Salmon, steelhead, and shad are examples.

**Aquatic Ecosystem** - Any body of water, such as a stream, lake, or estuary, and all organisms and nonliving components within it, functioning as a natural system.

**Aquatic Habitat** - Habitat that occurs in free water.

**Biological Diversity** - The variety of life and its processes.

**Bureau Assessment Species** - Plant and animal species on List 2 of the Oregon Natural Heritage Data Base, or those species on the Oregon List of Sensitive Wildlife Species (OAR 635-100-040), which are identified in BLM Instruction Memo No. OR-91-57, and are not included as federal candidate, state listed or Bureau sensitive species.

**Bureau Sensitive Species** - Plant or animal species eligible for federal listed, federal candidate, state listed, or state candidate (plant) status, or on List 1 in the Oregon Natural Heritage Data Base, or approved for this category by the State Director.

**Candidate Species** - Those plants and animals included in Federal Register “Notices of Review” that are being considered by the Fish and Wildlife Service (FWS) for listing as threatened or endangered. There are two categories that are of primary concern to BLM. These are:

Category 1. Taxa for which the Fish and Wildlife Service has substantial information on hand to support proposing the species for listing as threatened or endangered. Listing proposals are either being prepared or have been delayed by higher priority listing work.

Category 2. Taxa for which the Fish and Wildlife Service has information to indicate that listing is possibly appropriate. Additional information is being collected.

**Canopy** - The more or less continuous cover of branches and foliage formed collectively by adjacent trees and other woody species in a forest stand. Where significant height differences occur between trees within a stand, formation of a multiple canopy (multi-layered) condition can result.

**Climax Plant Community** - The theoretical, final stable, self-sustaining, and self reproducing state of plant community development that culminates plant succession on any given site. Given a long period of time between disturbances, plant associations on similar sites under similar climatic conditions approach the same species mixture and structure. Under natural conditions, disturbance events of various intensities and frequencies result in succession usually culminating as sub-climax with the theoretical end point occurring rarely of at all.

**Coarse Woody Debris** - Portion of tree that has fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter. FEMAT

**Commercial Thinning** - The removal of merchantable trees from an even-aged stand to encourage growth of the remaining trees.

**Connectivity** - A measure of the extent to which conditions between late-successional/old-growth forest areas provide habitat for breeding, feeding, dispersal, and movement of late-successional/old-growth-associated wildlife and fish species.

**Cover** - Vegetation used by wildlife for protection from predators, or to mitigate weather conditions, or to reproduce. May also refer to the protection of the soil and the shading



provided to herbs and forbs by vegetation.

**Critical Habitat** - Under the Endangered Species Act, (1) the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a listed species when it is determined that such areas are essential for the conservation of the species.

**Cultural Resource** - Any definite location of past human activity identifiable through field survey, historical documentation, or oral evidence; includes archaeological or architectural sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains.

**Cultural Site** - Any location that includes prehistoric and/or historic evidence of human use or that has important sociocultural value.

**Cumulative Effect** - The impact which results from identified actions when they are added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

**Density Management** - Cutting of trees for the primary purpose of widening their spacing so that growth of remaining trees can be accelerated. Density management harvest can also be used to improve forest health, to open the forest canopy, or to accelerate the attainment of old growth characteristics if maintenance or restoration of biological diversity is the objective.

**Designated Area** - An area identified in the Oregon Smoke Management Plan as a principal population center requiring protection under state air quality laws or regulations.

**Developed Recreation Site** - A site developed with permanent facilities designed to accommodate recreation use.

**Diameter At Breast Height (DBH)** - The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

**Ecosystem Diversity** - The variety of species and ecological processes that occur in different physical settings.

**Ecosystem Management** - The management of lands and their resources to meet objectives based on their whole ecosystem function rather than on their character in isolation. Management objectives blend long-term needs of people and environmental values in such a way that the lands will support diverse, healthy, productive and sustainable ecosystems.

**Endangered Species** - Any species defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

**Environmental Assessment (EA)** - A systematic analysis of site-specific BLM activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required; and to aid an agency's compliance with National Environmental Protection Agency when no Environmental Impact Statement is necessary.

**Environmental Impact** - The positive or negative effect of any action upon a given area or resource.

**Ephemeral Stream** - Streams that contain running water only sporadically, such as during and following storm events.

**Forest Canopy** - The cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

**Forest Health** - The ability of forest ecosystems to remain productive, resilient, and stable over time and to withstand the effects of periodic natural or human-caused stresses such as drought, insect attack, disease, climatic changes, flood, resource management practices and resource demands.

**Forest Land** - Land that is now, or is capable of becoming, at least 10% stocked with forest trees and that has not been developed for nontimber use.

**Forest Succession** - The orderly process of change in a forest as one plant community or stand condition is replaced by another, evolving towards the climax type of vegetation.

**General Forest Management Area** - Forest land managed on a regeneration harvest cycle of 70-110 years. A biological legacy of six to eight green trees per acre would be retained to assure forest health. Commercial thinning would be applied where practicable and where research indicates there would be gains in timber production.

**Genetic Diversity** - The variety within populations of a species.

**Habitat Diversity** - The number of different types of habitat within a given area.

**Historic Site** - A cultural resource resulting from activities or events dating to the historic period (generally post AD 1830 in western Oregon).

**Impact** - A spatial or temporal change in the environment caused by human activity.

**Intact Old Growth Habitat** - Older forest types that have not been entered for logging or are lightly entered such that structural and functional characteristics of the forest are essentially unchanged, except in relation to the size of the habitat island. Typically, forests of coniferous series with crown closure above 70%.

**Intermittent Stream** - Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. This includes what are sometimes referred to as

ephemeral streams if they meet these two criteria.

**Land Use Allocations** - Allocations which define allowable uses/activities, restricted uses/activities, and prohibited uses/activities. They may be expressed in terms of area such as acres or miles etc. Each allocation is associated with a specific management objective.

**Landing** - Any place on or adjacent to the logging site where logs are assembled for further transport.

**Landscape Diversity** - The size, shape and connectivity of different ecosystems across a large area.

**Landscape Ecology** - Principles and theories for understanding the structure, functioning, and change of landscapes over time. Specifically it considers (1) the development and dynamics of spatial heterogeneity, (2) interactions and exchanges across heterogeneous landscapes, (3) the influences of spatial heterogeneity on biotic and abiotic processes, and (4) the management of spatial heterogeneity. The consideration of spatial patterns distinguishes landscape ecology from traditional ecological studies, which frequently assume that systems are spatially homogeneous.

**Landscape Pattern** - The number, frequency, size, and juxtaposition of landscape elements (patches) which are important to the determination or interpretation of ecological processes.

**Late-Successional Forests** - Forest seral stages which include mature and old-growth age classes.

**Late-Successional Reserve** - A forest in its mature and/or old-growth stages that has been reserved.

**Log Decomposition Class** - Any of five stages of deterioration of logs in the forest; stages range from essentially sound (class 1) to almost total decomposition (class 5).

**Long-Term** - The period starting ten years following implementation of the Resource Management Plan. For most analyses, long-term impacts are defined as those existing 100 years after implementation.

**Long-Term Soil Productivity** - The capability of soil to sustain inherent, natural growth potential of plants and plant communities over time.

**Matrix Lands** - Federal land outside of reserves and special management areas that will be available for timber harvest at varying levels.

**Mature Stand** - A mappable stand of trees for which the annual net rate of growth has peaked. Stands are generally greater than 80-100 years old and less than 180-200 years old. Stand age, diameter of dominant trees, and stand structure at maturity vary by forest cover types and local site conditions. Mature stands generally contain trees with a small average diameter, less age class variation, and less structural complexity than old-growth stands of the same forest type. Mature stages of some forest types are suitable habitat for spotted owls.

However, mature forests are not always spotted owl habitat, and spotted owl habitat is not always mature forest.

**Mining Claims** - Portions of public lands claimed for possession of locatable mineral deposits, by locating and recording under established rules and pursuant to the 1872 Mining Law.

**Mitigating Measures** - Modifications of actions which (a) avoid impacts by not taking a certain action or parts of an action; (b) minimize impacts by limiting the degree or magnitude of the action and its implementation; (c) rectify impacts by repairing, rehabilitating or restoring the affected environment; (d) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or (e) compensate for impacts by replacing or providing substitute resources or environments.

**Monitoring** - The process of collecting information to evaluate if objectives and anticipated or assumed results of a management plan are being realized or if implementation is proceeding as planned.

**Multi-aged Stand** - A forest stand which has more than one distinct age class arising from specific disturbance and regeneration events at various times. These stands normally will have multi-layered structure.

**Multi-layered Canopy** - Forest stands with two or more distinct tree layers in the canopy; also called multi-storied stands.

**Multiple Use** - Management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people. The use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife, fish, and natural scenic, scientific and historical values.

**Neotropical migrants** - a wide variety of bird species, which breed in temperate North America but migrate to tropical habitats in Central and South America during winter.

**Noncommercial Forest Land** - Land incapable of yielding at least 20 cubic feet of wood per acre per year of commercial species; or land which is capable of producing only noncommercial tree species.

**Noncommercial Tree Species** - Minor conifer and hardwood species whose yields are not reflected in the commercial conifer forest land ASQ. Some species may be managed and sold under a suitable woodland ASQ and, therefore, may be commercial as a woodland species.

**Nonforest Land** - Land developed for nontimber uses or land incapable of being 10% stocked with forest trees.

**Noxious Plant** - A plant specified by law as being especially

undesirable, troublesome, and difficult to control.

**O&C Lands** - Public lands granted to the Oregon and California Railroad Company and subsequently revested to the United States.

**Off Highway Vehicle (OHV)** - Any motorized vehicle capable of, or designed for, travel on land, water, or natural terrain. The term "Off Highway Vehicle" will be used in place of the term "Off Road Vehicle" to comply with the Purposes of Executive Orders 11644 and 11989. The definition for both terms is the same.

**Old-Growth Conifer Stand** - Older forests occurring on western hemlock, mixed conifer, or mixed evergreen sites which differ significantly from younger forests in structure, ecological function, and species composition. Old growth characteristics begin to appear in unmanaged forests at 175-250 years of age. These characteristics include (a) a patchy, multi-layered canopy with trees of several age classes; (b) the presence of large living trees; (c) the presence of larger standing dead trees (snags) and down woody debris, and (d) the presence of species and functional processes which are representative of the potential natural community.

For purposes of inventory, old-growth stands on BLM-administered lands are only identified if they are at least 10% stocked with trees of 200 years or older and are ten acres or more in size. For purposes of habitat or biological diversity, the BLM uses the appropriate minimum and average definitions provided by Pacific Northwest Experiment Station publications 447 and GTR-285. This definition is summarized from the 1986 interim definitions of the Old-Growth Definitions Task Group.

**Old-Growth Forest** - A forest stand usually at least 180-220 years old with moderate high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood (decadence); numerous large snags; and heavy accumulations of wood, including large logs on the ground.

**Old-Growth-Dependent Species** - An animal species so adapted that it exists primarily in old growth forests or is dependent on certain attributes provided in older forests.

**Operations Inventory Unit** - An aggregation of trees occupying an area that is sufficiently uniform in composition, age, arrangement and condition to be distinguishable from vegetation on adjoining areas.

**Optimal Cover** - For elk, cover used to hide from predators and avoid disturbances, including man. It consists of a forest stand with four layers and an overstory canopy which can intercept and hold a substantial amount of snow, yet has dispersed, small openings. It is generally achieved when the dominant trees average 21 inches DBH or greater and have 70% or greater crown closure.

**Overstory** - That portion of trees which form the uppermost layer in a forest stand which consists of more than one distinct layer (canopy).

**Partial Cutting** - Removal of selected trees from a forest stand.

**Peak Flow** - The highest amount of stream or river flow occurring in a year or from a single storm event.

**Perennial Stream** - A stream that has running water on a year-round basis under normal climatic conditions.

**Planning Area** - All of the lands within the BLM management boundary addressed in a BLM resource management plan; however, BLM planning decisions apply only to BLM-administered lands and mineral estate.

**Plant Association** - A plant community type based on land management potential, successional patterns, and species composition.

**Plant Community** - An association of plants of various species found growing together in different areas with similar site characteristics.

**Precommercial Thinning** - The practice of removing some of the trees less than merchantable size from a stand so that remaining trees will grow faster.

**Prescribed Fire** - A fire burning under specified conditions that will accomplish certain planned objectives.

**Priority Habitats** - Aquatic, wetland and riparian habitats, and habitats of priority animal taxa.

**Probable Sale Quantity (PSQ)** - Probable sale quantity estimates the allowable harvest levels for the various alternatives that could be maintained without decline over the long term if the schedule of harvests and regeneration were followed. "Allowable" was changed to "probable" to reflect uncertainty in the calculations for some alternatives. Probable sale quantity is otherwise comparable to allowable sale quantity (ASQ). However, probable sale quantity does not reflect a commitment to a specific cut level. Probable sale quantity includes only scheduled or regulated yields and does not include "other wood" or volume of cull and other products that are not normally part of allowable sale quantity calculations.

**Proposed Threatened or Endangered Species** - Plant or animal species proposed by the U.S. Fish & Wildlife Service or National Marine Fisheries Service to be biologically appropriate for listing as threatened or endangered, and published in the Federal Register. It is not a final designation.

**Public Domain Lands** - Original holdings of the United States never granted or conveyed to other jurisdictions, or reacquired by exchange for other public domain lands.

**Public Water System** - A system providing piped water for public consumption. Such a system has at least fifteen service connections or regularly serves at least twenty-five individuals.

**Reforestation** - The natural or artificial restocking of an area with forest trees; most commonly used in reference to artificial stocking.

**Regeneration Harvest** - Timber harvest conducted with the partial objective of opening a forest stand to the point where favored tree species will be reestablished.

**Resource Management Plan (RMP)** - A land use plan prepared by the BLM under current regulations in accordance with the Federal Land Policy and Management Act.

**Right-of-Way** - A permit or an easement that authorizes the use of public lands for specified purposes, such as pipelines, roads, telephone lines, electric lines, reservoirs, and the lands covered by such an easement or permit.

**Riparian Reserves** - Designated riparian areas found outside Late-Successional Reserves.

**Riparian Zone** - Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs and wet meadows.

**Ripping** - The process of breaking up or loosening compacted soil to assure better penetration of roots, lower soil density, and increased microbial and invertebrate activity.

**Road** - A vehicle route which has been improved and maintained by mechanical means to ensure relatively regular and continuous use. A route maintained solely by the passage of vehicles does not constitute a road.

**Rotation** - The planned number of years between establishment of a forest stand and its regeneration harvest.

**Rural Interface Areas** - Areas where BLM-administered lands are adjacent to or intermingled with privately owned lands zoned for 1 to 20-acre lots or that already have residential development.

**Sanitation-Salvage Cuttings** - Combination of sanitation and salvage cuttings. In sanitation cuts trees either killed or injured by fire, insects, disease, etc., are removed for the purpose of preventing the spread of insect or disease. Salvage cut remove trees that are either killed or severely injured before merchantable material becomes unmerchantable.

**Scarification** - Mechanical removal of competing vegetation or interfering debris prior to planting.

**Seral Stages** - The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax stage. There are five stages:

Early Seral Stage - The period from disturbance to the time when crowns close and conifers or hardwoods dominate the site. Under the current forest management regime, the duration is approximately 0 to 10 years. This stage may be dominated by grasses and forbs or by sprouting brush or

hardwoods. Conifers develop slowly at first and gradually replace grasses, forbs, or brush as the dominant vegetation. Forage may be present; hiding or thermal cover may not be present except in rapidly sprouting brush communities.

Mid-Seral Stage - The mid-seral stage occurs from crown closure to the time when conifers would begin to die from competition; approximately age 10 to 40. Stands are dense and dominated by conifers, hardwoods, or dense brush. Grass, forbs, and herbaceous vegetation decrease. Hiding cover for big game is usually present.

Late Seral Stage - Late seral stage occurs when conifers would begin to die from competition to the time when stand growth slows; approximately age 40 to 80. Forest stands are dominated by conifers or hardwoods; canopy closure often approaches 100%. Stand diversity is minimal; conifer mortality rates and snag formation are rapid. Big game hiding and thermal cover is present. Forage and understory vegetation is minimal except in understocked stands or in meadow inclusions.

Mature Seral Stage - This stage exists from the point where stand growth slows to the time when the forest develops structural diversity; approximately age 80 to 200. Conifer and hardwood growth gradually decline. Developmental change slows. Larger trees increase significantly in size. Stand diversity gradually increases. Big game hiding cover, thermal cover, and some forage are present. With slowing growth, insect damage increases and stand breakup may begin on drier sites. Understory development is significant in response to openings in the canopy created by disease, insects, and windthrow. Vertical diversity increases. Larger snags are formed.

Old Growth - This stage constitutes the potential plant community capable of existing on a site given the frequency of natural disturbance events. For forest communities, this stage exists from approximately age 200 until when stand replacement occurs and secondary succession begins again. (Also see definitions of old-growth conifer stand and potential natural community.)

These definitions are used by BLM to separate age classes for analysis of impacts.

**Short-Term** - The period of time during which the RMP will be implemented; assumed to be ten years.

**Silvicultural Prescription** - A professional plan for controlling the establishment, composition, constitution and growth of forests.

**Silvicultural System** - A planned sequence of treatments over the entire life of a forest stand needed to meet management objectives.

**Site Class** - A measure of an area's relative capacity for producing timber or other vegetation.

**Site Index** - A measure of forest productivity expressed as the height of the tallest trees in a stand at an index age.

**Site Preparation** - Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment which is favorable for survival of suitable trees during the first growing season. This environment can be created by altering ground cover, soil or microsite conditions, using biological, mechanical, or manual clearing, prescribed burns, herbicides or a combination of methods.

**Skid Trail** - A pathway created by dragging logs to a landing (gathering point).

**Slash** - The branches, bark, tops, cull logs, and broken or uprooted trees left on the ground after logging.

**Smoke Management** - Conducting a prescribed fire under suitable fuel moisture and meteorological conditions with firing techniques that keep smoke impact on the environment within designated limits.

**Smoke Management Program** - A program designed to ensure that smoke impacts on air quality from agricultural or forestry burning operations are minimized; that impacts do not exceed, or significantly contribute to, violations of air quality standards or visibility protection guidelines; and that necessary open burning can be accomplished to achieve land management goals.

**Smoke Sensitive Area** - An area identified by the Oregon Smoke Management Plan that may be negatively affected by smoke but is not classified as a designated area.

**Snag** - Any standing dead, partially-dead, or defective (cull) tree at least ten inches in diameter at breast height (DBH) and at least six feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

**Snag Dependent Species** - Birds and animals dependent on snags for nesting, roosting, or foraging habitat.

**Soil Compaction** - An increase in bulk density (weight per unit volume) and a decrease in soil porosity resulting from applied loads, vibration, or pressure.

**Soil Displacement** - The removal and horizontal movement of soil from one place to another by mechanical forces such as a blade.

**Soil Productivity** - Capacity or suitability of a soil for establishment and growth of a specified crop or plant species, primarily through nutrient availability.

**Special Forest Products** - Firewood, shake bolts, mushrooms, ferns, floral greens, berries, mosses, bark, grasses etc., that could be harvested in accordance with the objectives and guidelines in the proposed resource management plan.

**Special Status Species** - Plant or animal species falling in any of the following categories (see separate glossary definitions for each):

- Threatened or Endangered Species

- Proposed Threatened or Endangered Species
- Candidate Species
- State Listed Species
- Bureau Sensitive Species
- Bureau Assessment Species

**Species Diversity** - The number, different kinds, and relative abundance of species.

**Stand (Tree Stand)** - An aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement, and condition so that it is distinguishable from the forest in adjoining areas.

**Stand Density** - An expression of the number and size of trees on a forest site. May be expressed in terms of numbers of trees per acre, basal area, stand density index, or relative density index.

**Stand-replacement Wildfire** - A wildfire that kills nearly 100% of the stand.

**State Listed Species** - Plant or animal species listed by the State of Oregon as threatened or endangered pursuant to ORS 496.004, ORS 498.026, or ORS 564.040.

**Stream Class** - A system of stream classification established in the Oregon Forest Practices Act. Class I streams are those which are significant for: 1) domestic use, 2) angling, 3) water dependent recreation, and 4) spawning, rearing or migration of anadromous or game fish. All other streams are Class II. Class II special protection streams (Class II SP) are Class II streams which have a significant summertime cooling influence on downstream Class I waters which are at or near a temperature at which production of anadromous or game fish is limited. Revised Forest Practices Act may have a new system within a year.

**Stream Order** - A hydrologic system of stream classification based on stream branching. Each small unbranched tributary is a first order stream. Two first order streams join to make a second order stream. Two second order streams join to form a third order stream and so forth.

**Structural Diversity** - Variety in a forest stand that results from layering or tiering of the canopy and the die-back, death and ultimate decay of trees. In aquatic habitats, the presence of a variety of structural features such as logs and boulders that create a variety of habitat.

**Succession** - A series of dynamic changes by which one group of organisms succeeds another through stages leading to potential natural community or climax. An example is the development of series of plant communities (called seral stages) following a major disturbance.

**Suitable Woodland** - Forest land occupied by minor conifer and hardwood species not considered in the commercial forest land ASQ determination and referred to as noncommercial species. These species may be considered commercial for fuelwood, etc. under woodland management. Also included are low site and nonsuitable commercial forest land. These lands

must be biologically and environmentally capable of supporting a sustained yield of forest products.

**Surface Erosion** - The detachment and transport of soil particles by wind, water, or gravity. Surface erosion can occur as the loss of soil in a uniform layer (sheet erosion), in many rills, or by dry ravel.

**Thermal Cover** - Cover used by animals to lessen the effects of weather. For elk, a stand of conifer trees which are 40 feet or more tall with an average crown closure of 70% or more. For deer, cover may include saplings, shrubs or trees at least five feet tall with 75% crown closure.

**Threatened Species** - Any species defined through the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range and published in the Federal Register.

**Timber Production Capability Classification (TPCC)** - The process of partitioning forestland into major classes indicating relative suitability to produce timber on a sustained yield basis.

**Transportation System** - Network of roads used to manage BLM-administered lands. Includes BLM controlled roads and some privately controlled roads. Does not include Oregon Department of Transportation, county and municipal roads.

**Understory** - That portion of trees or other woody vegetation which form the lower layer in a forest stand which consists of more than one distinct layer (canopy).

**Viable Population** - A wildlife or plant population that contains an adequate number of reproductive individuals to appropriately ensure the long-term existence of the species.

**Viewshed** - The landscape that can be directly seen from a viewpoint or along a transportation corridor.

**Visual Resources** - The visible physical features of a landscape.

**Visual Resource Management (VRM)** - The inventory and planning actions to identify visual values and establish objectives for managing those values and the management actions to achieve visual management objectives.

**Water Quality** - The chemical, physical, and biological characteristics of water.

**Water Yield** - The quantity of water derived from a unit area of watershed.

**Wetlands or Wetland Habitat** - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include, but are not limited to, swamps, marshes, bogs, and similar areas.

**Wet Meadows** - Areas where grasses predominate. Normally

waterlogged within a few inches of the ground surface.

**Wildlife Tree** - A live tree retained to become future snag habitat.

**Withdrawal** - A designation which restricts or closes public lands from the operation of land or mineral disposal laws.

**Woodland** - Forest land producing trees not typically used as saw timber products and not included in calculation of the commercial forest land ASQ.